Virginia Department of Emergency Management

HAZARD RISK & VULNERABLE POPULATIONS

2021 HAZARD MITIGATION ASSISTANCE GRANTS EQUITY WORKSHOPS

The Deloitte Health360 Solution informs population vulnerability and enables a data-driven approach to operationalizing equity in mitigation projects. It is broken down into two components: Population Vulnerability and Hazard Risk. Both components are added together to identify potential priority areas to support future mitigation projects.

POPULATION VULNERABILITY

Provides a people-focused metric that can be combined with infrastructure, elevation, and financial metrics to support a holistic approach to mitigation planning.

HAZARD RISK

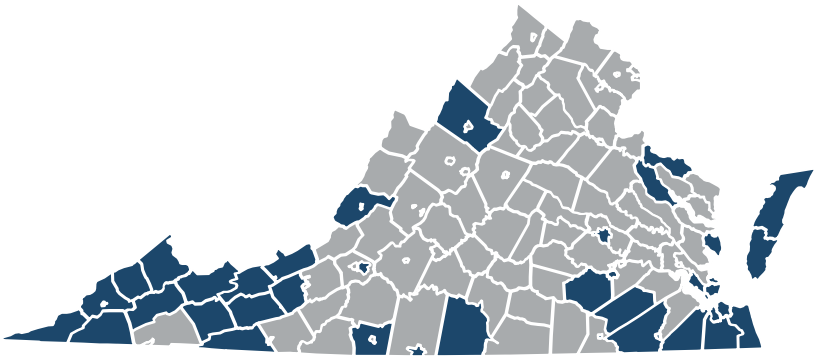
Reflects the number of households in each flood or hurricane zone weighted by risk severity to provide a people-focused risk metric.

PRIORITIZED CENSUS TRACTS

Combining population vulnerability and hazard risk at a sub-locality level can identify potential priority areas to support with future mitigation projects.

SERIES OBJECTIVES

1. Interpret data from the Deloitte Analysis and identify flooding risk in these areas.
2. Understand and explore potential solutions to hazard risk areas and vulnerable populations.
3. Educate stakeholders on funding programs such as FEMA hazard mitigation grants, CDBG grants, and the new CFP fund.
4. Discuss next steps, technical assistance needs, and training.



40 Localities Identified Scoring Over 70%

REGISTRATION https://odu.co1.qualtrics.com/jfe/form/SV_dd549WZWcIKVz3E

QUESTIONS? vdemgrants@vdem.virginia.gov

HAZARD RISK & POPULATION VULNERABILITY

Virginia Department of Emergency Management

SUBREGIONAL WORKSHOP

June 30, 2021 from 10am to 12pm

- Alleghany
- Covington
- Roanoke City

POPULATION VULNERABILITY

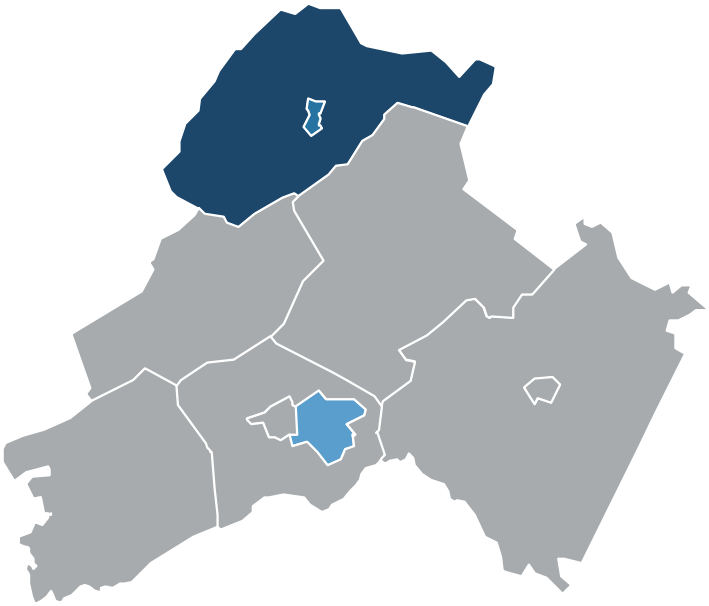
Provides a people-focused metric that can be combined with infrastructure, elevation, and financial metrics to support a holistic approach to mitigation planning.

HAZARD RISK

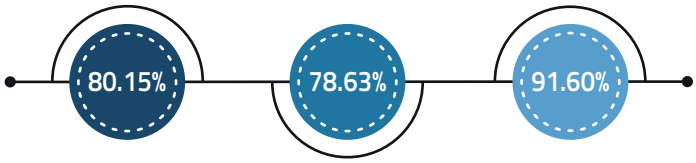
Reflects the number of house-holds in each flood or hurricane zone weighted by risk severity to provide a people-focused risk metric.

PRIORITIZED CENSUS TRACTS

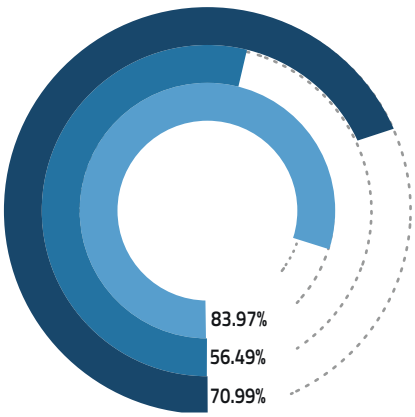
Combining population vulnerability and hazard risk at a sub-locality level can identify potential priority areas to support with future mitigation projects.



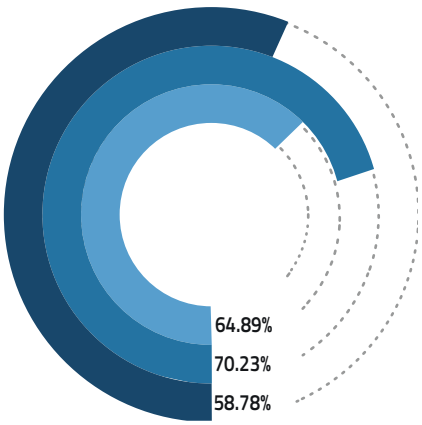
OVERALL PERCENTILE



HAZARD RISK PERCENTILE



POPULATION VULNERABILITY PECENTILE



FACILITATED BY The Virginia Modeling, Analysis, and Simulation Center

COVID-19 Unified Command/VEST Health Equity Working Group

MITIGATION PROJECTS ANALYSIS
ROANOKE CITY

NOVEMBER 2020

Topics

The analysis provides **Roanoke City** with information to support planning and preparation of projects for the Building Resilient Infrastructure and Communities (BRIC) grant application with an equity focus.

- ❑ Introduction to Data-Driven Approach
- ❑ Hazard Risk
- ❑ Population Vulnerability
- ❑ Prioritization
- ❑ FEMA Funding and Past Projects
- ❑ Considerations for Next Steps

This analysis ***expands the scope of population vulnerability*** to provide a ***data-driven equity lens*** for disaster mitigation project design

Data-Driven Approach

The Health360 platform informs population vulnerability and enables a data-driven approach to operationalizing equity in mitigation projects.

Powered By Health360

230M+
U.S. Adults Scored

Data updated every
1 Month

Contains over
1,500+
variables on Social Determinants of Health and other metrics

150+
Advanced predictive algorithms

400+
Variables used in the mortality predictive algorithm

Provides 360° view of a person

Algorithms rebuilt every 2 years

40+
Clients served

What is hazard risk and how is it calculated?

Household Hazard risk reflects the number of households in each flood or hurricane zone, weighted by severity.

Hazard Risk

Number of households in each zone:

Flood zones
- 100 year coastal
- 100 year riverine flood way
- 100 year riverine
- 500 year riverine

Hurricane zones
- Segmented A, B, C, D

- Households that reside in the flood and hurricane zones are considered to be **at-risk for environmental disasters**
- Hazard Risk reflects **the number of households located in Flood and Hurricane Zones**
- Hazard Risk is not a measure of **infrastructure, elevation, or financial risks**, but is a measure of the number of at-risk households in an area, weighted by the severity of the risk, to **provide a people-focused risk metric**

Note: Severity of the risk per household is captured on an ordinal scale from 1 – least severe (Hurricane Zone D, 500 Year Riverine) to 4 – most severe (Hurricane Zone A, 100 Year Coastal)

Hazard Risk = (# of Households in Particular Hurricane or Flood Zones) X (Specified Zone Risk Level (1 through 4 depending on risk severity))

Hazard Risk in Your Locality

The figures below indicate how your locality's hazard risk[1] compares to others in Virginia as well as how many households reside in each flood or hurricane zone.

Hazard Risk[1] Percentile

84th

Your locality has more households in more severe flood/hurricane zones than 84% of other Virginia localities

Hazard Risk[1] Rank

22nd

Your locality's Hazard Risk score is ranked 22nd out of 132 Virginia localities

Households in Flood Zones & Locality Rank

← Severity			
100 Year Coastal	100 Year Riverine Floodway	100 Year Riverine	500 Year Riverine
0	130	1,160	732
N/A out of 132 Localities	9th out of 132 Localities	14th out of 132 Localities	15th out of 132 Localities

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk

Households in Hurricane Zones & Locality Rank

← Severity			
Zone A	Zone B	Zone C	Zone D
0	0	0	0
N/A out of 132 Localities	N/A out of 132 Localities	N/A out of 132 Localities	N/A out of 132 Localities

Evacuation zones designated as A through D are in place across coastal Virginia

1. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity
2. Note that the total sum of households may be more than the households in your locality because some are located in both flood and hurricane zones

What is population vulnerability and how is it calculated?

The Population Vulnerability score provides a people-focused metric that can be combined with infrastructure, elevation, and financial metrics to support a holistic approach to mitigation planning.

Population Vulnerability

Prevalence of:

1. Communities of color
2. Elevated health risk
3. Low income
4. # of people in household
5. # of children in household
6. Unemployment risk
7. Age (older adults)
8. Lack of vehicle access

- Population Vulnerability **expands upon the 2018 Virginia Hazard Mitigation plan definition** of population vulnerability (density and percentage of total population)
- Population Vulnerability **only considers localities with households in flood or hurricane zones (132 localities)**
- Population Vulnerability **identifies the locality and census tracts/census blocks** with the most vulnerable individuals/households on average
- Population Vulnerability should be interpreted as a **household's ability to safely respond** to an environmental disaster

Population Vulnerability in Your Locality

The figures below indicate how your locality's population vulnerability[1] score and composite attributes compare to other localities in Virginia.

Population Vulnerability[1] Percentile

65th

On average, a household in a flood or hurricane zone in your locality is more vulnerable than a household in 65% of other Virginia localities

Population Vulnerability[1] Rank

47th

Your locality's Population Vulnerability score is ranked 47th out of 132 Virginia localities

How ROANOKE CITY Compares to Other Localities Across the Eight Vulnerability Attributes

Low Income	Elevated Health Risk	Age	Communities of Color
77th percentile	**36th** percentile	**8th** percentile	**76th** percentile

# of Children in Household	# of People in Household	Unemployment Risk	Lack of Vehicle Access
38th percentile	**20th** percentile	**78th** percentile	**96th** percentile

1. Population Vulnerability should be interpreted as a household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones

Using Population Vulnerability & Hazard Risk to Prioritize Census Tracts

Combining population vulnerability and hazard risk at a sub-locality level can identify potential priority areas to support with future mitigation projects.

Population Vulnerability

Prevalence of:

1. Communities of color
2. Elevated health risk
3. Low income
4. # of people in household
5. # of children in household
6. Unemployment risk
7. Age (older adults)
8. Lack of vehicle access

+

Hazard Risk

Number of households in each zone:

Flood zones

- 100 year coastal
- 100 year riverine floodway
- 100 year riverine
- 500 year riverine

Hurricane zones

- Segmented A, B, C, D

=

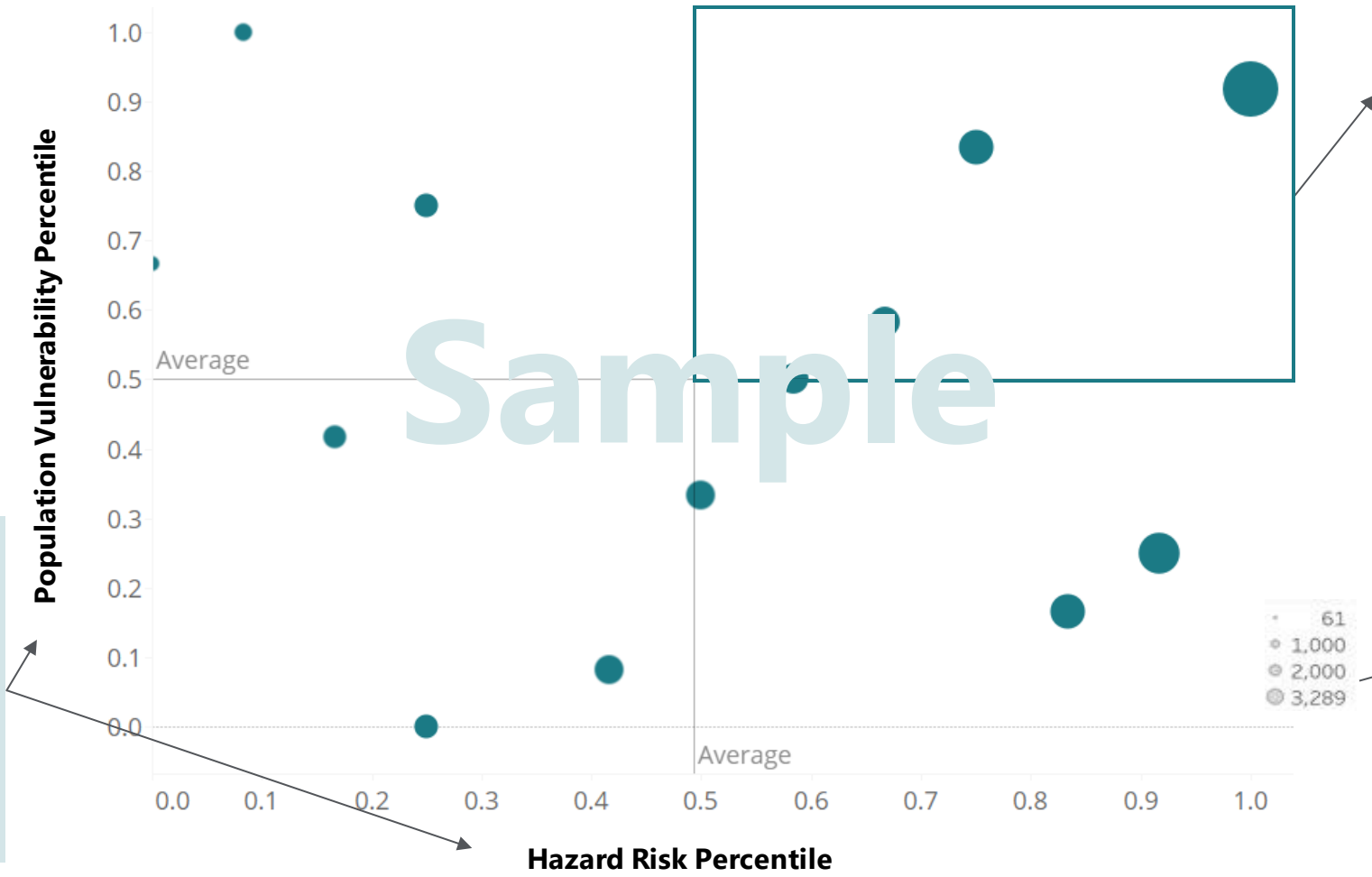
Prioritized Census Tracts

- High Population Vulnerability
- High Hazard Risk

Census tracts with both more households in severe flood/hurricane zones AND households with more vulnerable occupants

How to interpret the Census Tract plots

The chart below represents a *sample* locality and offers guidance on how to interpret the information when planning mitigation efforts.



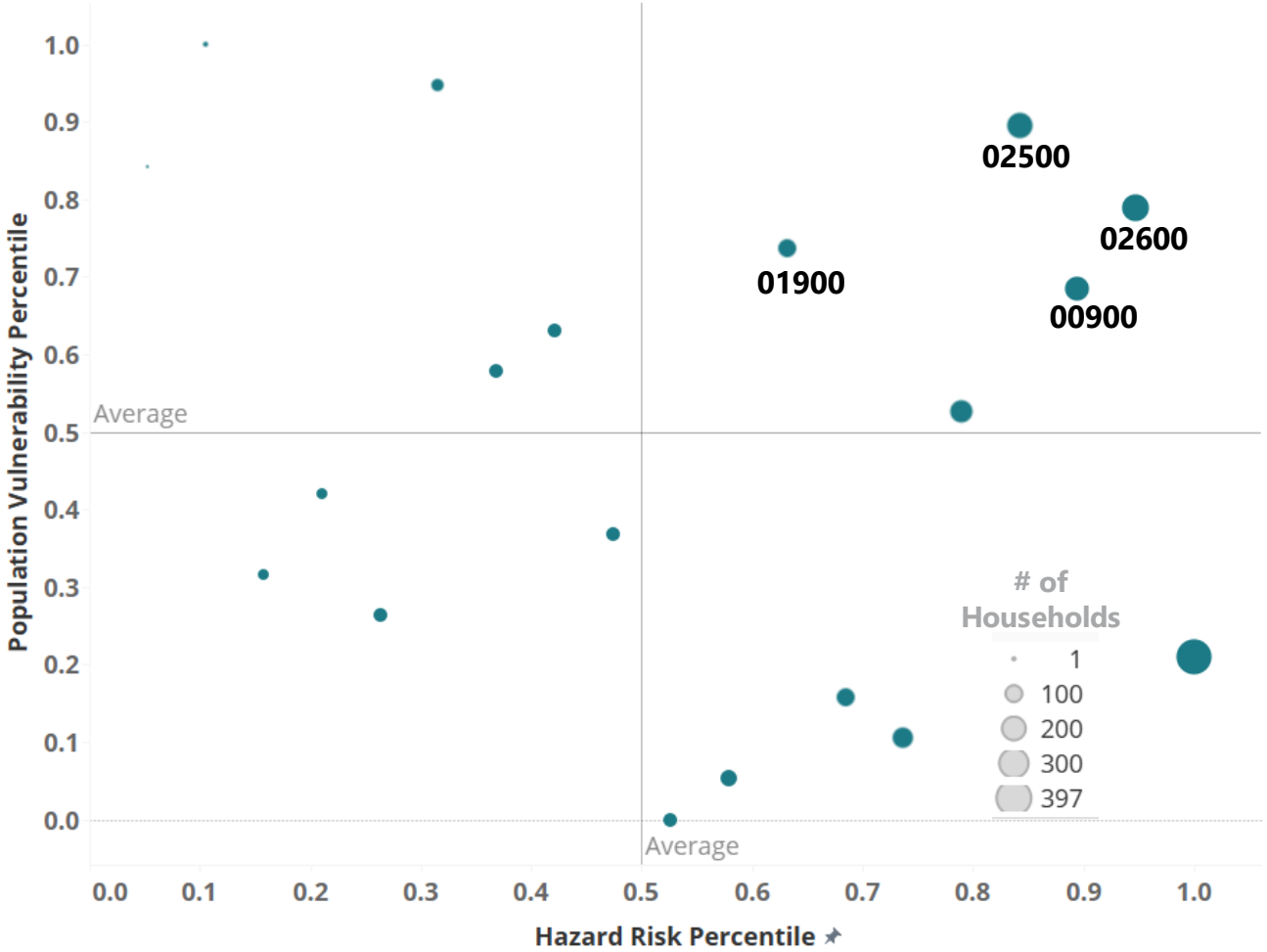
Circles in the upper right quadrant represent areas that you might consider prioritizing due to high population vulnerability and hazard risk

The x- and y-axes measure the percentiles of hazard risk and population vulnerability for each area

Size of the circle indicates the number of households in each area

Prioritizing Census Tracts in Roanoke City

Areas with the most vulnerable populations and households in severe flood and hurricane zones present prioritization opportunities for mitigation projects.



Priority Areas in Flood and Hurricane Zones

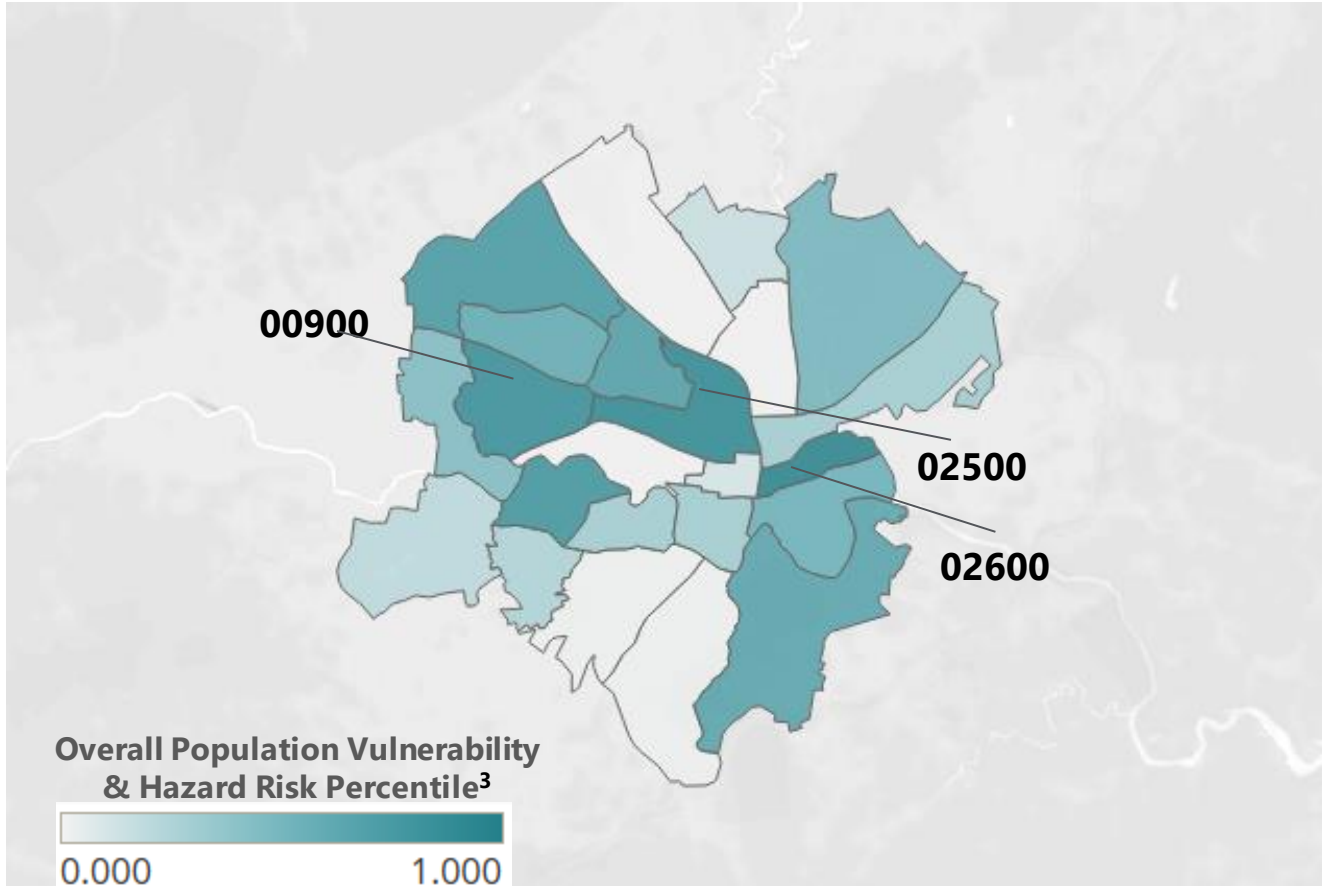
#	Area	# of Households	Overall Percentile	Population Vulnerability[1] Percentile	Hazard Risk[2] Percentile
1	02600	232	100th	79th	95th
2	02500	207	95th	89th	84th
3	00900	186	89th	68th	89th
4	01900	105	84th	74th	63rd
5	02300	160	79th	53rd	79th
6	02400	50	74th	95th	32nd
7	02800	397	68th	21st	100th
8	00100	8	63rd	100th	11st

1. Population Vulnerability should be interpreted as a household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones
2. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity

Prioritizing Census Tracts in Roanoke City continued

Areas with the most vulnerable populations and households in severe flood and hurricane zones present prioritization opportunities for mitigation projects.

Potential Priority Areas in Roanoke City



Priority Areas in Flood and Hurricane Zones

#	Area	# of Households	Overall Percentile	Population Vulnerability[1] Percentile	Hazard Risk[2] Percentile
1	**02600**	**232**	**100th**	79th	95th
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7	**02800**	**397**	**68th**	21st	100th
8	**00100**	**8**	**63rd**	100th	11st

1. Population Vulnerability should be interpreted as a household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones
2. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity
3. Sub-localities at the 0th percentile (areas in white) do not have households in Flood or Hurricane Zones

Priority Census Tracts Summary

When evaluating future mitigation project opportunities, it may be helpful to consider the underlying attributes of population vulnerability and the number of houses in each flood/hurricane zone.

			Within-Roanoke City Percentiles										
#	Census Tract	# of Households	Overall	Population Vulnerability[1]	Communities of Color	Elevated Health Risk	Low Income	# of People	# of Children	Unemployment Risk	Age	Lack of Vehicle Access
1	02600	232	100th	79th	68th	63rd	79th	84th	95th	68th	16th	79th
2	02500	207	95th	89th	89th	68th	74th	68th	68th	47th	74th	84th
3	00900	186	89th	68th	84th	0th	58th	79th	84th	84th	26th	95th

			W/I-Roanoke City Percentiles		Roanoke City Household Counts[3]							
#	Census Tract	# of Households	Overall	Hazard Risk[2]	100 Year Coastal	100 Year Riverine FW	100 Year Riverine	500 Year Riverine	Hurr. Zone A	Hurr. Zone B	Hurr. Zone C	Hurr Zone D
1	02600	232	100th	95th	0	0	170	62	0	0	0	0
2	02500	207	95th	84th	0	18	75	114	0	0	0	0
3	00900	186	89th	89th	0	20	157	9	0	0	0	0

1. Population Vulnerability should be interpreted as an average household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones
2. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity
3. Note that the total sum of households may be more than the households in your locality because some are located in both flood and hurricane zones

Review of FEMA Funding & Past Mitigation Projects

Review of Mitigation Projects In Your Locality

The figures below provide information regarding mitigation projects[1] in your locality from 1990-2019 that may be helpful to consider in planning potential future mitigation projects.

Total Exclusive Project Funding[1]

$55,068

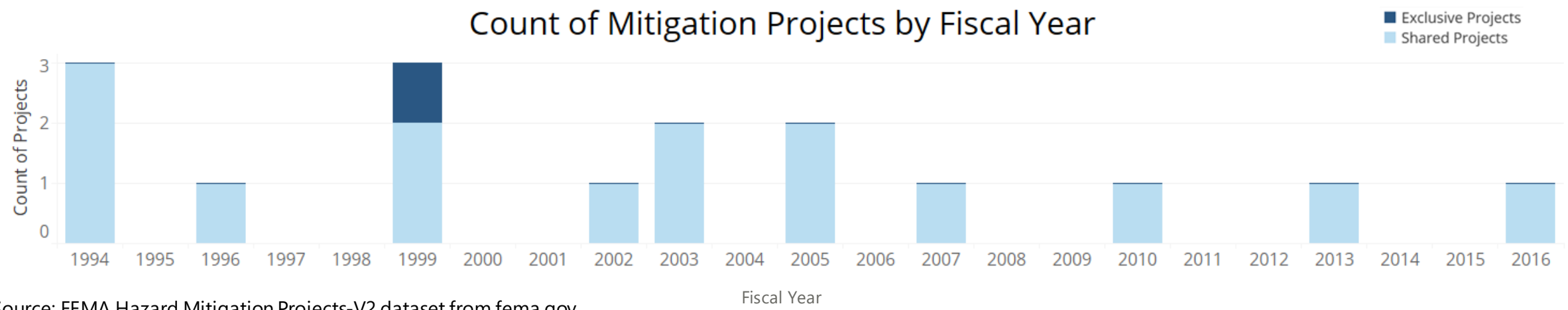
This is the total amount of federal funding alloted to mitigation projects solely owned by your locality from 1990-2019

Total Shared Project Funding[1]

$4,995,794

This is the total amount of federal funding allotted to mitigation projects owned by your locality and at least 1 other from 1990-2019

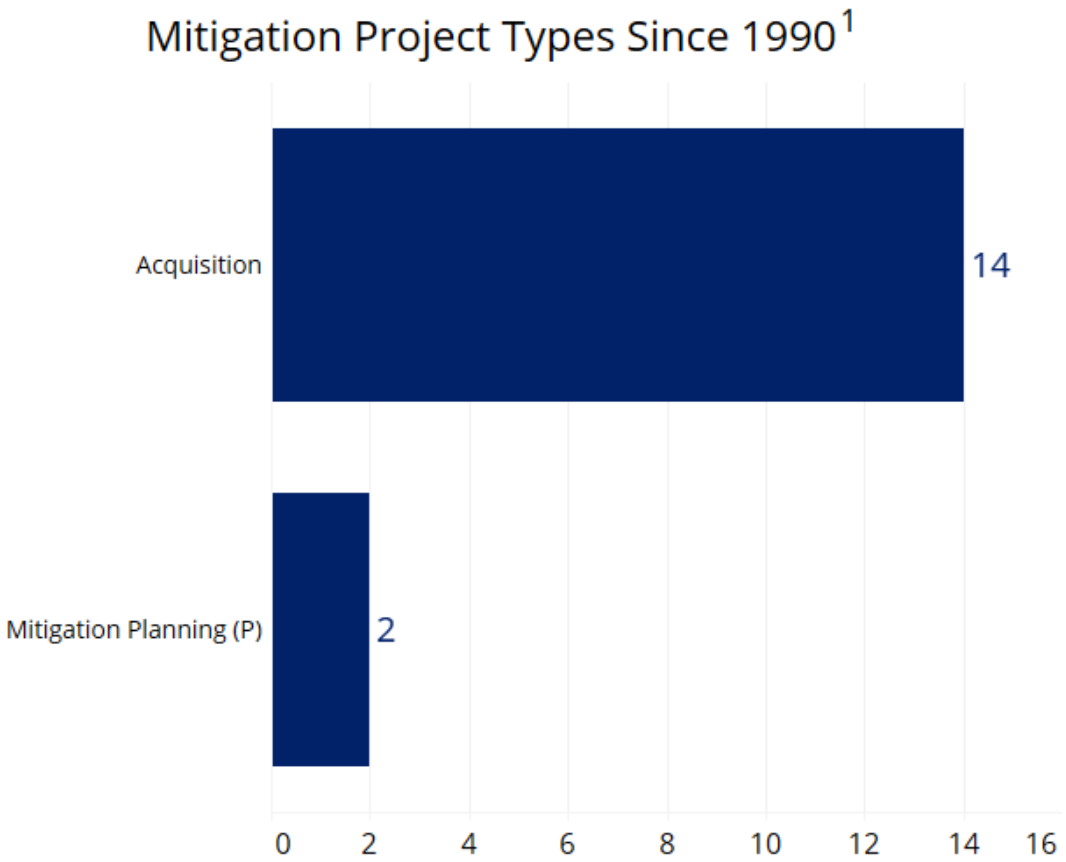
Exclusive Projects	Average Exclusive Project Size	Shared Projects	Average Counties Per Shared Project
1	$55K	15	2.8

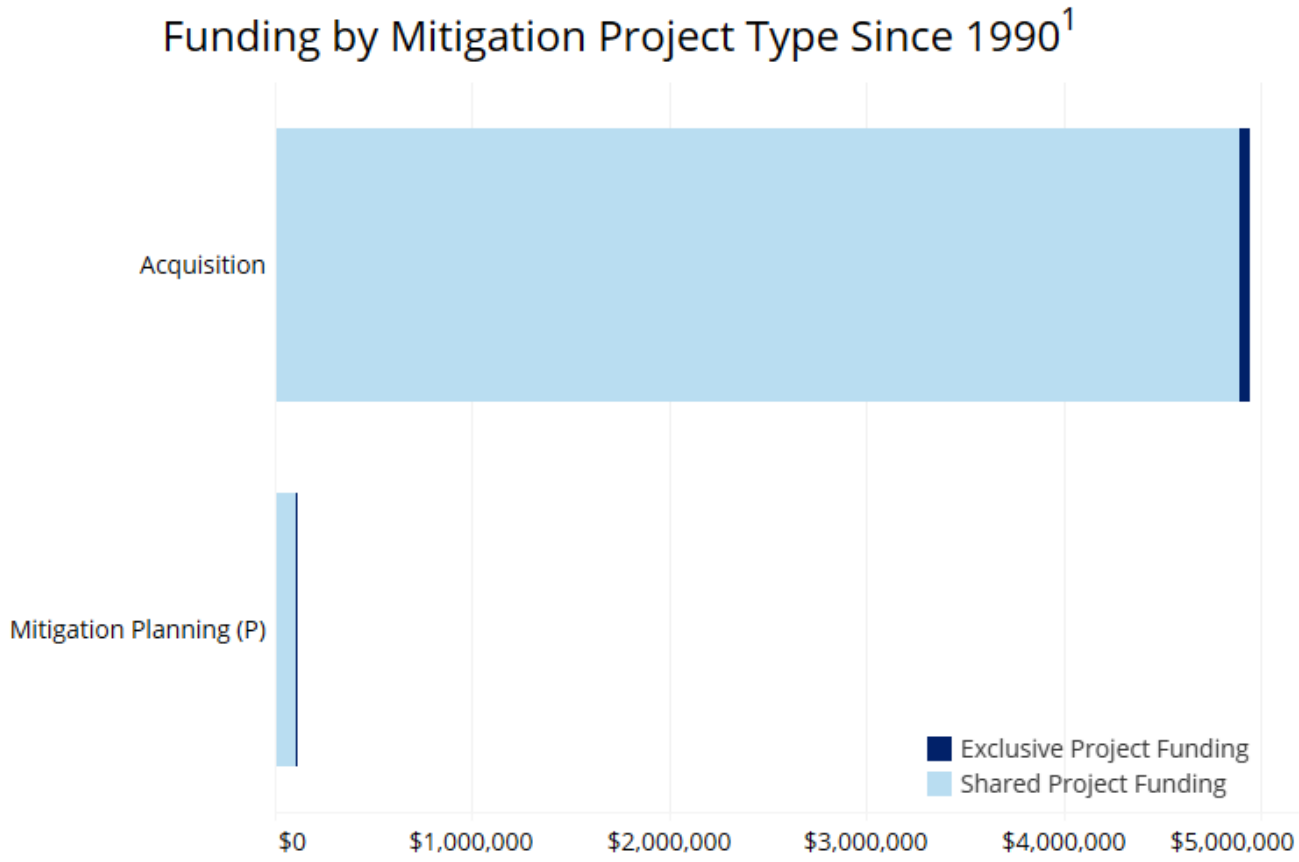


1. Source: FEMA Hazard Mitigation Projects-V2 dataset from fema.gov

Past Mitigation Projects – Top Project Types

The figures below provide information regarding mitigation projects[1] in your locality from 1990-2019 that may be helpful to consider in planning potential future mitigation projects.





1. Source: FEMA Hazard Mitigation Projects-V2 dataset from fema.gov

COVID-19 Impacts

COVID-19 In Your Locality

Since the beginning of the COVID-19 Pandemic, Roanoke City has experienced the following:

Cases[1]

Total	Per 100k
2,695	**2,705**
16th out of 133 localities[2]	**26th** out of 133 localities

Hospitalizations[1]

Total	Per 100k
96	**96**
25th out of 133 localities	**76th** out of 133 localities

Deaths[1]

Total	Per 100k
37	**37**
19th out of 133 localities	**55th** out of 133 localities

1. COVID-19 case, hospitalization, and death figures are sourced from the Virginia Department of Health as of **10/26/2020**
2. COVID-19 Impact rankings are for all 133 Virginia localities, rather than the 132 included in the BRIC analysis for having at least one household in a flood or hurricane zone

Considerations for Next Steps

Considerations for Next Steps

When evaluating future mitigation project opportunities, the population vulnerability and hazard risk metrics can supplement existing measures to design mitigation projects with an equity lens.

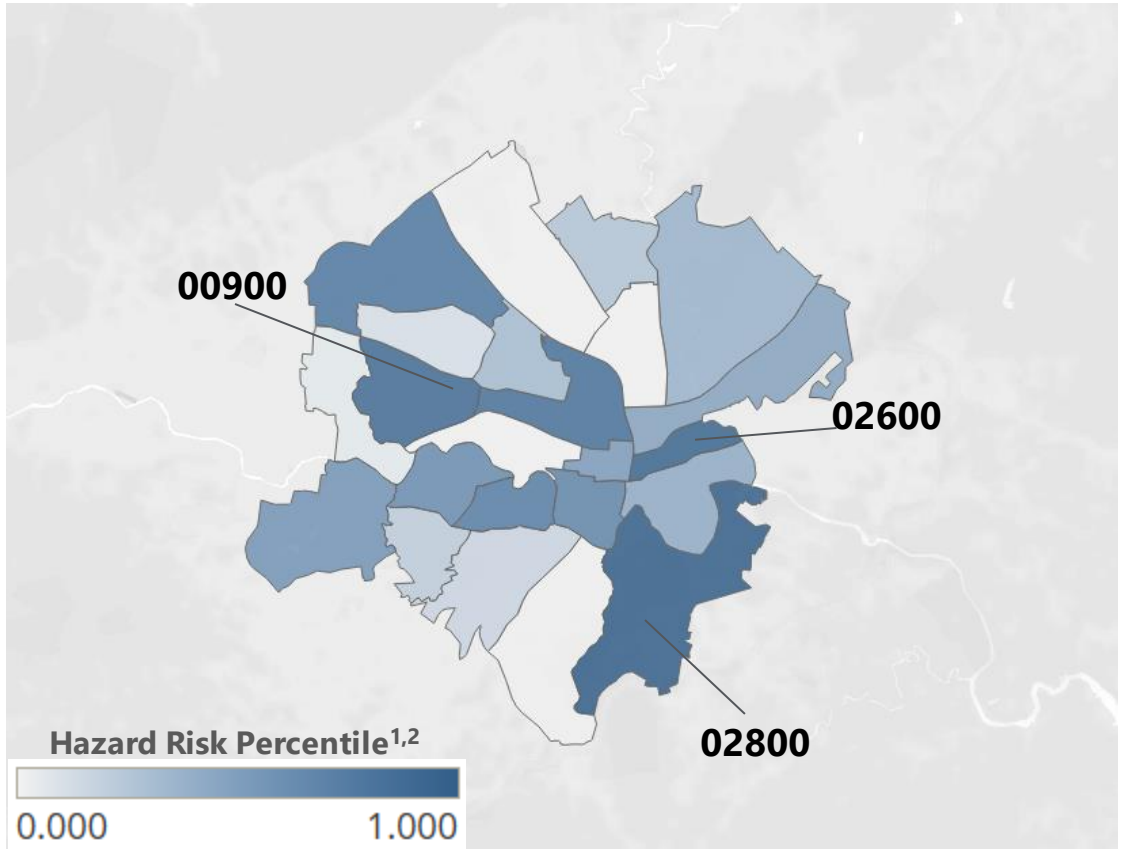
- Consider targeting **priority areas** when designing future mitigation projects
- Consider analysis at the **census tract/block level** to understand population vulnerability and hazard risks at a granular level to support decisions on mitigation projects
- Consider **supplementing these people-focused metrics** with existing infrastructure, elevation, and financial analysis for a holistic mitigation planning approach that includes equity considerations
- Consider **past project types** and **prior funding** in the overall mitigation strategy

Appendix

What areas in your locality have the greatest hazard risk?

When designing mitigation projects, it may be helpful to consider specific census tracts that have the greatest number of households residing in the more severe flood and/or hurricane zones.

Hazard Risk[1] in Roanoke City



Top-5 Census Tracts for Hazard Risk[1]

#	Census Tract	# of House-holds	Hazard Risk Percentile	Roanoke City Household Counts							
				100 Year Coastal	100 Year Riverine FW	100 Year Riverine	500 Year Riverine	Hurr. Zone A	Hurr. Zone B	Hurr. Zone C	Hurr. Zone D
1	**02800**	**397**	**100th**	0	55	189	153	0	0	0	0
2	**02600**	**232**	**95th**	0	0	170	62	0	0	0	0
3	**00900**	**186**	**89th**	0	20	157	9	0	0	0	0
4	**02500**	**207**	**84th**	0	18	75	114	0	0	0	0
5	**02300**	**160**	**79th**	0	5	121	34	0	0	0	0

Note: see the appendix for a data table for the Top 15 Census Tracts

1. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity
2. Census tracts at the 0th percentile (areas in white) do not have households in Flood or Hurricane Zones

What is population vulnerability and how is it calculated? *continued*

The vulnerability score for each Virginia household reflects an estimate of the household's ability to safely respond in the event of an environmental disaster.

Population Vulnerability

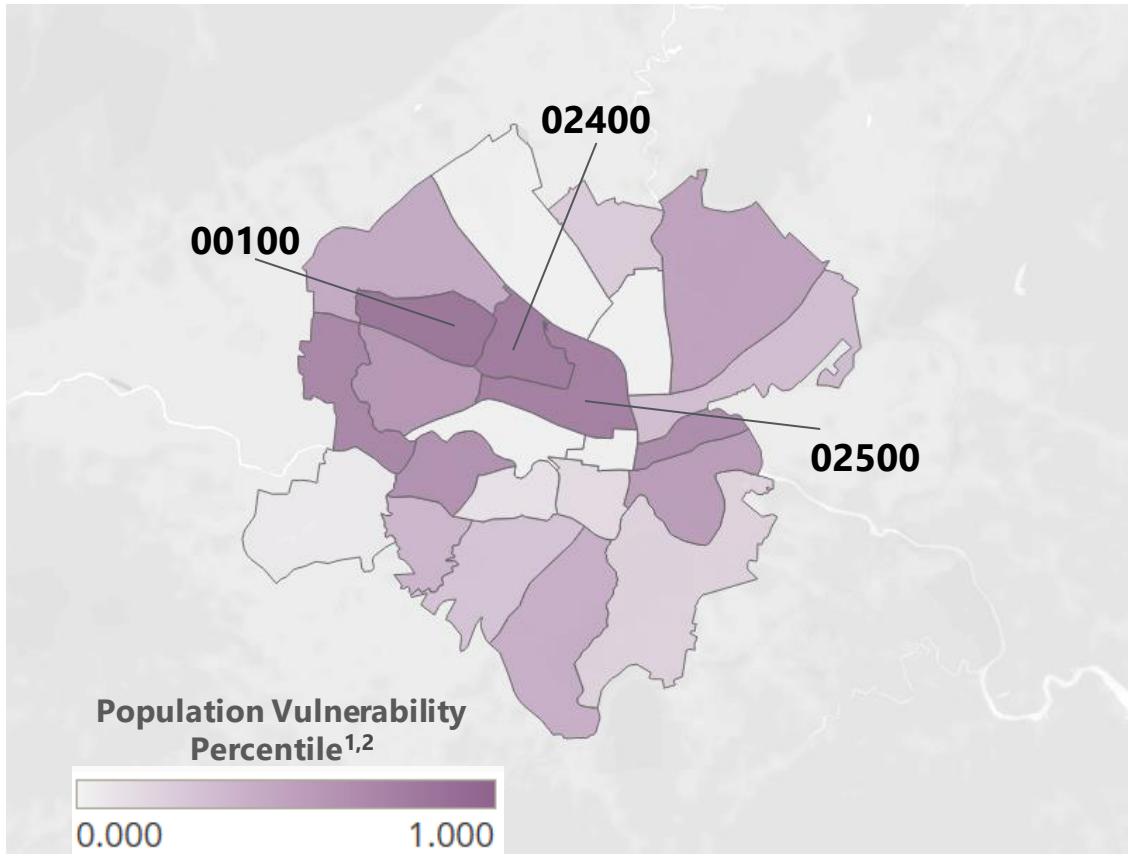
Attribute[1]	Weighting[2]	Description (in a household)
Low Income	18%	Number of adults with income less than $30,000
Elevated Health Risk	17%	Number of adults with one or more serious health conditions
Age (Older Adults)	15%	Number of adults who are age 65 and older
Communities of Color	13%	Number of Black or African American or Hispanic or Latino adults
# of Children in Household	12%	Number of children
# of People in Household	10%	Number of adults and children
Unemployment Risk	8%	Number of adults at high risk of unemployment
Lack of Vehicle Access	6%	Does the household lack access to a motor vehicle?

1. Two attributes - English as a Primary Language and Prevalence of Mobile Housing - were dropped from consideration based on the 8/20/2020 BRIC Working Group Session
2. Attribute contributions to Population Vulnerability were weighted as a result of the BRIC Working Group Session on 8/20/2020

What areas in your locality have the greatest population vulnerability?

When designing mitigation projects, it may be helpful to consider specific census tracts that are home to the most vulnerable individuals in the event of an environmental disaster.

Population Vulnerability[1] in Roanoke City



Top-5 Census Tracts for Population Vulnerability[1]

			Within-Roanoke City Percentiles								
#	Census Tract	# of House-holds	Pop. Vul.	Comm. of Color	Elevated Health Risk	Low Income	# of People	# of Children	Unem. Risk	Age	Vehicle Access
1	**00100**	**8**	**100th**	79th	37th	100th	42nd	26th	100th	95th	68th
2	**02400**	**50**	**95th**	100th	32nd	95th	63rd	47th	79th	84th	26th
3	**02500**	**207**	**89th**	89th	68th	74th	68th	68th	47th	74th	84th
4	**02200**	**3**	**84th**	95th	84th	89th	95th	100th	0th	0th	0th
5	**02600**	**232**	**79th**	68th	63rd	79th	84th	95th	68th	16th	79th

Note: see the appendix for a data table for the Top 15 Census Tracts

1. Population Vulnerability should be interpreted as an average household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones
2. Census tracts at the 0th percentile (areas in white) do not have households in Flood or Hurricane Zones

Data table | Population Vulnerability & Hazard Risk

			Percentiles											Within-locality Household Counts							
#	Census Tract	# of Households	Overall	Population Vulnerability	Communities of Color	Elevated Health Risk	Low Income	# of People	# of Children	Unem-ployment Risk	Age	Lack of Vehicle Access	Hazard Risk	100 Year Coastal	100 Year Riverine FW	100 Year Riverine	500 Year Riverine	Hurr. Zone A	Hurr. Zone B	Hurr. Zone C	Hurr Zone D
1	02600	232	100th	79th	68th	63rd	79th	84th	95th	68th	16th	79th	95th	0	0	1	02600	232	100th	79th	68th
2	02500	207	95th	89th	89th	68th	74th	68th	68th	47th	74th	84th	84th	0	18	2	02500	207	95th	89th	89th
3	00900	186	89th	68th	84th	0th	58th	79th	84th	84th	26th	95th	89th	0	20	3	00900	186	89th	68th	84th
4	01900	105	84th	74th	63rd	95th	68th	74th	89th	26th	53rd	47th	63rd	0	0	4	01900	105	84th	74th	63rd
5	02300	160	79th	53rd	74th	11st	26th	37th	53rd	63rd	68th	63rd	79th	0	5	5	02300	160	79th	53rd	74th
6	02400	50	74th	95th	100th	32nd	95th	63rd	47th	79th	84th	26th	32nd	0	0	6	02400	50	74th	95th	100th
7	02800	397	68th	21st	47th	16th	21st	47th	63rd	32nd	37th	42nd	100th	0	55	7	02800	397	68th	21st	47th
8	00100	8	63rd	100th	79th	37th	100th	42nd	26th	100th	95th	68th	11st	0	1	8	00100	8	63rd	100th	79th
9	02700	62	58th	63rd	42nd	79th	84th	32nd	58th	58th	32nd	58th	42nd	0	0	9	02700	62	58th	63rd	42nd
10	00601	52	53rd	58th	53rd	47th	63rd	53rd	42nd	89th	63rd	16th	37th	0	2	10	00601	52	53rd	58th	53rd
11	02200	3	47th	84th	95th	84th	89th	95th	100th	0th	0th	0th	5th	0	0	11	02200	3	47th	84th	95th
12	01800	134	32nd	11st	21st	58th	16th	21st	21st	16th	42nd	74th	74th	0	0	12	01800	134	32nd	11st	21st
13	01200	94	32nd	16th	37th	42nd	32nd	11st	11st	95th	11st	89th	68th	0	0	13	01200	94	32nd	16th	37th
14	00602	59	32nd	37th	16th	53rd	37th	58th	79th	21st	47th	21st	47th	0	10	14	00602	59	32nd	37th	16th
15	03100	39	26th	42nd	32nd	74th	47th	26th	32nd	37th	58th	53rd	21st	0	3	15	03100	39	26th	42nd	32nd

1. Note: These figures only account for census areas that have households in flood and/or hurricane zones

Data table | FEMA Funding[1]

Grantee	Year of Fiscal Year	Exclusive vs Shared	Subgrantee	Project Counties	Project Type(s)	Federal Funds Obligated
ROANOKE CITY	2016	Shared	ROANOKE VA..	ROANOKE (CITY); ALLEGHANY; BOTET..	91.3: Local Multihazard Mitigati..	$60,024
	2013	Shared	City of Roano..	ROANOKE CITY	200.1: Acquisition of Private Re..	$70,818
	2010	Shared	Roanoke Vall..	ALLEGHANY; BOTETOURT; COVINGT..	91.1: Local Multihazard Mitigati..	$46,520
	2007	Shared	Roanoke Cou..	ROANOKE	200.1: Acquisition of Private Re..	$300,398
	2005	Shared	City of Roano..	ROANOKE CITY	200.1: Acquisition of Private Re..	$316,980
			Roanoke	ROANOKE (CITY)	200.1: Acquisition of Private Re..	$59,156
	2003	Shared	Vinton	ROANOKE	200.1: Acquisition of Private Re..	$196,500
	2002	Shared	Roanoke	ROANOKE; ACCOMACK	200.3: Acquisition of Public Real..	$121,050
	1999	Exclusive	Roanoke, City..	ROANOKE (CITY)	200.1: Acquisition of Private Re..	$55,068
		Shared	Roanoke (Co..	ROANOKE	200.1: Acquisition of Private Re..	$359,398
			Salem	ROANOKE	200.1: Acquisition of Private Re..	$48,427
	1996	Shared	ROANOKE CO..	ROANOKE	200.1: Acquisition of Private Re..	$555,454
	1994	Shared	ROANOKE	ROANOKE	200.1: Acquisition of Private Re..	$387,997
				ROANOKE (CITY)	200.1: Acquisition of Private Re..	$1,915,462
			ROANOKE CO..	ROANOKE	200.1: Acquisition of Private Re..	$557,610

1. Source: FEMA Hazard Mitigation Projects-V2 dataset from fema.gov

COVID-19 Unified Command/VEST Health Equity Working Group

MITIGATION PROJECTS ANALYSIS
COVINGTON CITY

NOVEMBER 2020

Topics

The analysis provides **Covington City** with information to support planning and preparation of projects for the Building Resilient Infrastructure and Communities (BRIC) grant application with an equity focus.

- ❑ Introduction to Data-Driven Approach
- ❑ Hazard Risk
- ❑ Population Vulnerability
- ❑ Summary
- ❑ FEMA Funding and Past Projects
- ❑ Considerations for Next Steps

This analysis ***expands the scope of population vulnerability*** to provide a ***data-driven equity lens*** for disaster mitigation project design

Data-Driven Approach

The Health360 platform informs population vulnerability and enables a data-driven approach to operationalizing equity in mitigation projects.

Powered By Health360

230M+
U.S. Adults Scored

Data updated every
1 Month

Contains over
1,500+
variables on Social Determinants of Health and other metrics

150+
Advanced predictive algorithms

400+
Variables used in the mortality predictive algorithm

Provides 360° view of a person

Algorithms rebuilt every 2 years

40+
Clients served

What is hazard risk and how is it calculated?

Household Hazard risk reflects the number of households in each flood or hurricane zone, weighted by severity.

Hazard Risk

Number of households in each zone:

Flood zones
- 100 year coastal
- 100 year riverine flood way
- 100 year riverine
- 500 year riverine

Hurricane zones
- Segmented A, B, C, D

- Households that reside in the flood and hurricane zones are considered to be **at-risk for environmental disasters**
- Hazard Risk reflects **the number of households located in Flood and Hurricane Zones**
- Hazard Risk is not a measure of **infrastructure, elevation, or financial risks**, but is a measure of the number of at-risk households in an area, weighted by the severity of the risk, to **provide a people-focused risk metric**

Note: Severity of the risk per household is captured on an ordinal scale from 1 – least severe (Hurricane Zone D, 500 Year Riverine) to 4 – most severe (Hurricane Zone A, 100 Year Coastal)

Hazard Risk = (# of Households Analyzed in Particular Hurricane or Flood Zones) X (Specified Zone Risk Level (1 through 4 depending on risk severity))

Hazard Risk in Your Locality

The figures below indicate how your locality's hazard risk[1] compares to others in Virginia as well as how many households reside in each flood or hurricane zone.

Hazard Risk[1] Percentile

56th

Your locality has more households in more severe flood/hurricane zones than 56% of other Virginia localities

Hazard Risk[1] Rank

58th

Your locality's Hazard Risk score is ranked 58th out of 132 Virginia localities

Households in Flood Zones & Locality Rank

← Severity			
100 Year Coastal	100 Year Riverine Floodway	100 Year Riverine	500 Year Riverine
0	8	273	235
N/A out of 132 Localities	48th out of 132 Localities	54th out of 132 Localities	31st out of 132 Localities

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk

Households in Hurricane Zones & Locality Rank

← Severity			
Zone A	Zone B	Zone C	Zone D
0	0	0	0
N/A out of 132 Localities	N/A out of 132 Localities	N/A out of 132 Localities	N/A out of 132 Localities

Evacuation zones designated as A through D are in place across coastal Virginia

1. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity
2. Note that the total sum of households may be more than the households in your locality because some are located in both flood and hurricane zones

What is population vulnerability and how is it calculated?

The Population Vulnerability score provides a people-focused metric that can be combined with infrastructure, elevation, and financial metrics to support a holistic approach to mitigation planning.

Population Vulnerability

Prevalence of:

1. Communities of color
2. Elevated health risk
3. Low income
4. # of people in household
5. # of children in household
6. Unemployment risk
7. Age (older adults)
8. Lack of vehicle access

- Population Vulnerability **expands upon the 2018 Virginia Hazard Mitigation plan definition** of population vulnerability (density and percentage of total population)
- Population Vulnerability **only considers localities with households in flood or hurricane zones (132 localities)**
- Population Vulnerability **identifies the locality and census blocks/Census Blocks** with the most vulnerable individuals/households on average
- Population Vulnerability should be interpreted as a **household's ability to safely respond** to an environmental disaster

Population Vulnerability in Your Locality

The figures below indicate how your locality's population vulnerability[1] score and composite attributes compare to other localities in Virginia.

Population Vulnerability[1] Percentile

70th

On average, a household in a flood or hurricane zone in your locality is more vulnerable than a household in 70% of other Virginia localities

Population Vulnerability[1] Rank

40th

Your locality's Population Vulnerability score is ranked 40th out of 132 Virginia localities

How COVINGTON CITY Compares to Other Localities Across the Eight Vulnerability Attributes

Low Income	Elevated Health Risk	Age	Communities of Color
92nd percentile	23rd percentile	44th percentile	40th percentile

# of Children in Household	# of People in Household	Unemployment Risk	Lack of Vehicle Access
63rd percentile	49th percentile	89th percentile	69th percentile

1. Population Vulnerability should be interpreted as a household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones

Population Vulnerability & Hazard Risk Summary

Understanding population vulnerability and hazard risk in your locality can help support future mitigation projects.

Population Vulnerability[1] Percentile

70th

On average, a household in a flood or hurricane zone in your locality is more vulnerable than a household in 70% of other Virginia localities

Hazard Risk[2] Percentile

56th

Your locality has more households in more severe flood/hurricane zones than 56% of other Virginia localities

Population Vulnerability[1] Rank

40th

Your locality's Population Vulnerability score is ranked 40th out of 132 Virginia localities

Hazard Risk[2] Rank

58th

Your locality's Hazard Risk score is ranked 58th out of 132 Virginia localities

1. Population Vulnerability should be interpreted as a household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones
2. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity

Review of FEMA Funding & Past Mitigation Projects

Review of Mitigation Projects In Your Locality

The figures below provide information regarding mitigation projects[1] in your locality from 1990-2019 that may be helpful to consider in planning potential future mitigation projects.

Total Exclusive Project Funding[1]

$0

This is the total amount of federal funding alloted to mitigation projects solely owned by your locality from 1990-2019

Total Shared Project Funding[1]

$106,544

This is the total amount of federal funding allotted to mitigation projects owned by your locality and at least 1 other from 1990-2019

Exclusive Projects

0

Average Project Size

$0

Shared Projects

2

Average Counties Per Project

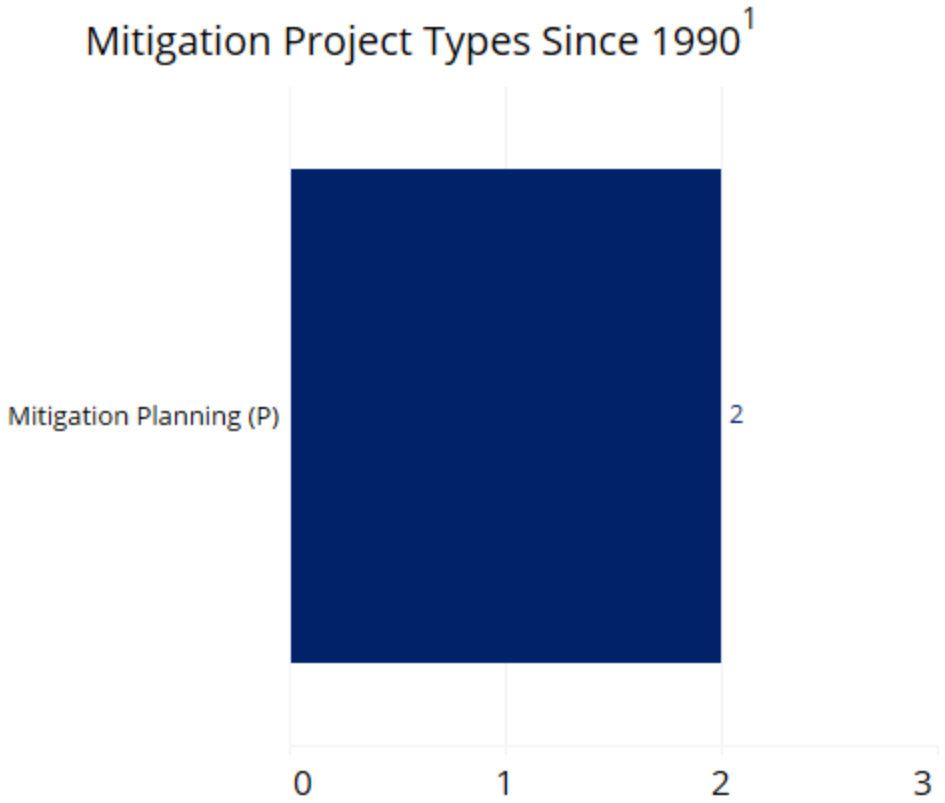
7.0

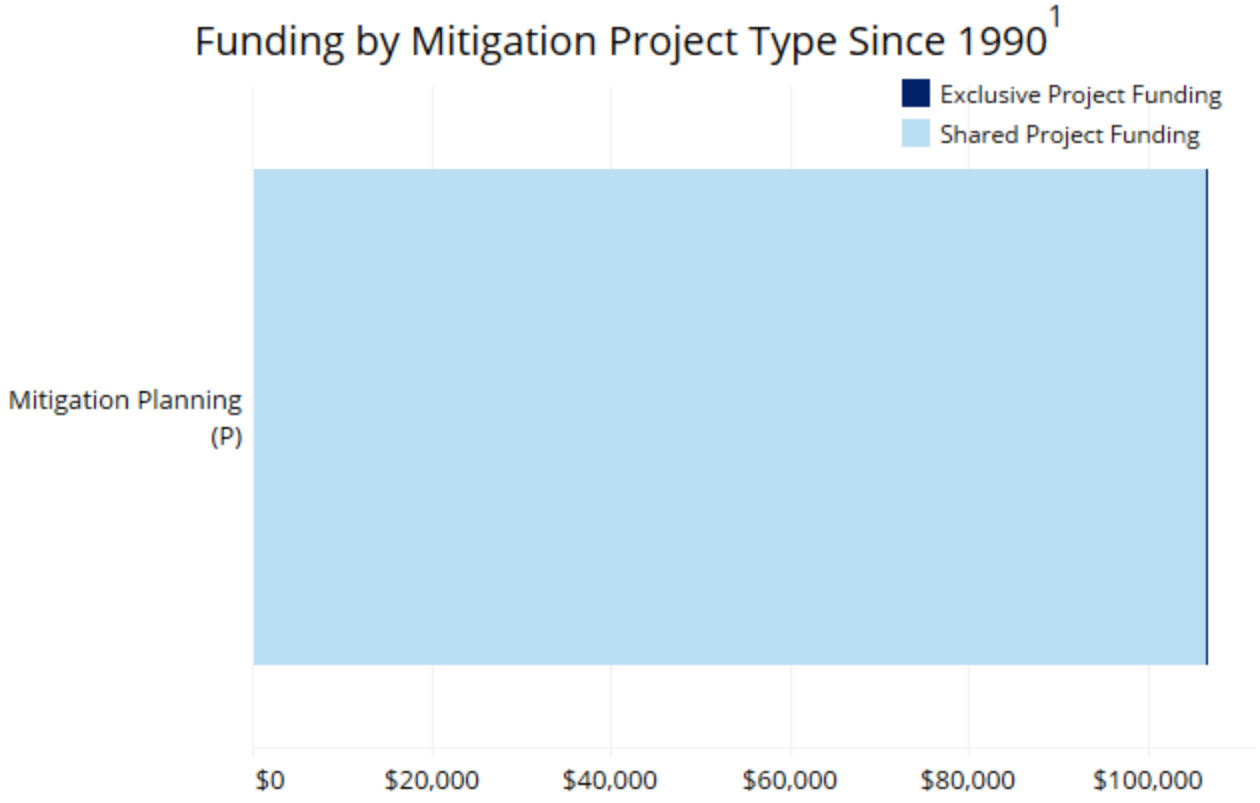
1. Source: FEMA Hazard Mitigation Projects-V2 dataset from fema.gov

Note: see the appendix for a complete data table of these mitigation projects

Past Mitigation Projects – Top Project Types

The figures below provide information regarding mitigation projects[1] in your locality from 1990-2019 that may be helpful to consider in planning potential future mitigation projects.





1. Source: FEMA Hazard Mitigation Projects-V2 dataset from fema.gov

Note: see the appendix for a complete data table of these mitigation projects

COVID-19 Impacts

COVID-19 In Your Locality

Since the beginning of the COVID-19 Pandemic, Covington City has experienced the following:

Cases[1]

Total	Per 100k
37 **131st** out of 133 localities[2]	**663** **130th** out of 133 localities

Hospitalizations[1]

Total	Per 100k
1 **131st** out of 133 localities	**18** **132nd** out of 133 localities

Deaths[1]

Total	Per 100k
0 **127th** out of 133 localities	**0** **127th** out of 133 localities

1. COVID-19 case, hospitalization, and death figures are sourced from the Virginia Department of Health as of **10/28/2020**
2. COVID-19 Impact rankings are for all 133 Virginia localities, rather than the 132 included in the BRIC analysis for having at least one household in a flood or hurricane zone

Considerations for Next Steps

Considerations for Next Steps

When evaluating future mitigation project opportunities, the population vulnerability and hazard risk metrics can supplement existing measures to design mitigation projects with an equity lens.

- Consider **population vulnerability** and it's various components to support decisions on mitigation projects
- Consider **supplementing these people-focused metrics** with existing infrastructure, elevation, and financial analysis for a holistic mitigation planning approach that includes equity considerations
- Consider **past project types** and **prior funding** in the overall mitigation strategy

Appendix

What is population vulnerability and how is it calculated? *continued*

The vulnerability score for each Virginia household reflects an estimate of the household's ability to safely respond in the event of an environmental disaster.

Population Vulnerability

Attribute[1]	Weighting[2]	Description (in a household)
Low Income	18%	Number of adults with income less than $30,000
Elevated Health Risk	17%	Number of adults with one or more serious health conditions
Age (Older Adults)	15%	Number of adults who are age 65 and older
Communities of Color	13%	Number of Black or African American or Hispanic or Latino adults
# of Children in Household	12%	Number of children
# of People in Household	10%	Number of adults and children
Unemployment Risk	8%	Number of adults at high risk of unemployment
Lack of Vehicle Access	6%	Does the household lack access to a motor vehicle?

1. Two attributes - English as a Primary Language and Prevalence of Mobile Housing - were dropped from consideration based on the 8/20/2020 BRIC Working Group Session
2. Attribute contributions to Population Vulnerability were weighted as a result of the BRIC Working Group Session on 8/20/2020

Data table | FEMA Funding[1]

Grantee	Year of Fiscal Year	Exclusive vs Shared	Subgrantee	Project Counties	Project Type(s)	Federal Funds Obligated
	2016	Shared	ROANOKE VALLEY - ALLEGHANY RC	ROANOKE (CITY); ALLEGHANY; BOTETOURT; CRAIG; SALEM (CITY); COVINGTON (CITY); ROANOKE	91.3: Local Multihazard Mitigation Plan - UPDATE	$60,024
COVINGTON CITY						
	2010	Shared	Roanoke Valley-Alleghany Regional Commission	ALLEGHANY; BOTETOURT; COVINGTON CITY; CRAIG; ROANOKE; ROANOKE CITY; SALEM CITY	91.1: Local Multihazard Mitigation Plan	$46,520

1. Source: FEMA Hazard Mitigation Projects-V2 dataset from fema.gov

COVID-19 Unified Command/VEST Health Equity Working Group

MITIGATION PROJECTS ANALYSIS
ALLEGHANY COUNTY

NOVEMBER 2020

Topics

The analysis provides **Alleghany County** with information to support planning and preparation of projects for the Building Resilient Infrastructure and Communities (BRIC) grant application with an equity focus.

- ❑ Introduction to Data-Driven Approach
- ❑ Hazard Risk
- ❑ Population Vulnerability
- ❑ Prioritization
- ❑ FEMA Funding and Past Projects
- ❑ Considerations for Next Steps

This analysis ***expands the scope of population vulnerability*** to provide a ***data-driven equity lens*** for disaster mitigation project design

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Provides 360° view of a person

Algorithms rebuilt every 2 years

40+
Clients served

What is hazard risk and how is it calculated?

Household Hazard risk reflects the number of households in each flood or hurricane zone, weighted by severity.

Hazard Risk

Number of households in each zone:

Flood zones
- 100 year coastal
- 100 year riverine flood way
- 100 year riverine
- 500 year riverine

Hurricane zones
- Segmented A, B, C, D

- Households that reside in the flood and hurricane zones are considered to be **at-risk for environmental disasters**
- Hazard Risk reflects **the number of households located in Flood and Hurricane Zones**
- Hazard Risk is not a measure of **infrastructure, elevation, or financial risks**, but is a measure of the number of at-risk households in an area, weighted by the severity of the risk, to **provide a people-focused risk metric**

Note: Severity of the risk per household is captured on an ordinal scale from 1 – least severe (Hurricane Zone D, 500 Year Riverine) to 4 – most severe (Hurricane Zone A, 100 Year Coastal)

Hazard Risk = (# of Households in Particular Hurricane or Flood Zones) X (Specified Zone Risk Level (1 through 4 depending on risk severity))

Hazard Risk in Your Locality

The figures below indicate how your locality's hazard risk[1] compares to others in Virginia as well as how many households reside in each flood or hurricane zone.

Hazard Risk[1] Percentile

71st

Your locality has more households in more severe flood/hurricane zones than 71% of other Virginia localities

Hazard Risk[1] Rank

39th

Your locality's Hazard Risk score is ranked 39th out of 132 Virginia localities

Households in Flood Zones & Locality Rank

← Severity			
100 Year Coastal	100 Year Riverine Floodway	100 Year Riverine	500 Year Riverine
0	94	617	97
N/A out of 132 Localities	16th out of 132 Localities	30th out of 132 Localities	49th out of 132 Localities

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk

Households in Hurricane Zones & Locality Rank

← Severity			
Zone A	Zone B	Zone C	Zone D
0	0	0	0
N/A out of 132 Localities	N/A out of 132 Localities	N/A out of 132 Localities	N/A out of 132 Localities

Evacuation zones designated as A through D are in place across coastal Virginia

1. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity
2. Note that the total sum of households may be more than the households in your locality because some are located in both flood and hurricane zones

What is population vulnerability and how is it calculated?

The Population Vulnerability score provides a people-focused metric that can be combined with infrastructure, elevation, and financial metrics to support a holistic approach to mitigation planning.

Population Vulnerability

Prevalence of:

1. Communities of color
2. Elevated health risk
3. Low income
4. # of people in household
5. # of children in household
6. Unemployment risk
7. Age (older adults)
8. Lack of vehicle access

- Population Vulnerability **expands upon the 2018 Virginia Hazard Mitigation plan definition** of population vulnerability (density and percentage of total population)
- Population Vulnerability **only considers localities with households in flood or hurricane zones (132 localities)**
- Population Vulnerability **identifies the locality and census tracts/census blocks** with the most vulnerable individuals/households on average
- Population Vulnerability should be interpreted as a **household's ability to safely respond** to an environmental disaster

Population Vulnerability in Your Locality

The figures below indicate how your locality's population vulnerability[1] score and composite attributes compare to other localities in Virginia.

Population Vulnerability[1] Percentile

59th

On average, a household in a flood or hurricane zone in your locality is more vulnerable than a household in 59% of other Virginia localities

Population Vulnerability[1] Rank

55th

Your locality's Population Vulnerability score is ranked 55th out of 132 Virginia localities

How ALLEGHANY COUNTY Compares to Other Localities Across the Eight Vulnerability Attributes

Low Income	Elevated Health Risk	Age	Communities of Color
74th percentile	35th percentile	58th percentile	20th percentile

# of Children in Household	# of People in Household	Unemployment Risk	Lack of Vehicle Access
69th percentile	71st percentile	44th percentile	23rd percentile

1. Population Vulnerability should be interpreted as a household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones

Using Population Vulnerability & Hazard Risk to Prioritize Census Tracts

Combining population vulnerability and hazard risk at a sub-locality level can identify potential priority areas to support with future mitigation projects.

Population Vulnerability

Prevalence of:

1. Communities of color
2. Elevated health risk
3. Low income
4. # of people in household
5. # of children in household
6. Unemployment risk
7. Age (older adults)
8. Lack of vehicle access

+

Hazard Risk

Number of households in each zone:

Flood zones

- 100 year coastal
- 100 year riverine floodway
- 100 year riverine
- 500 year riverine

Hurricane zones

- Segmented A, B, C, D

=

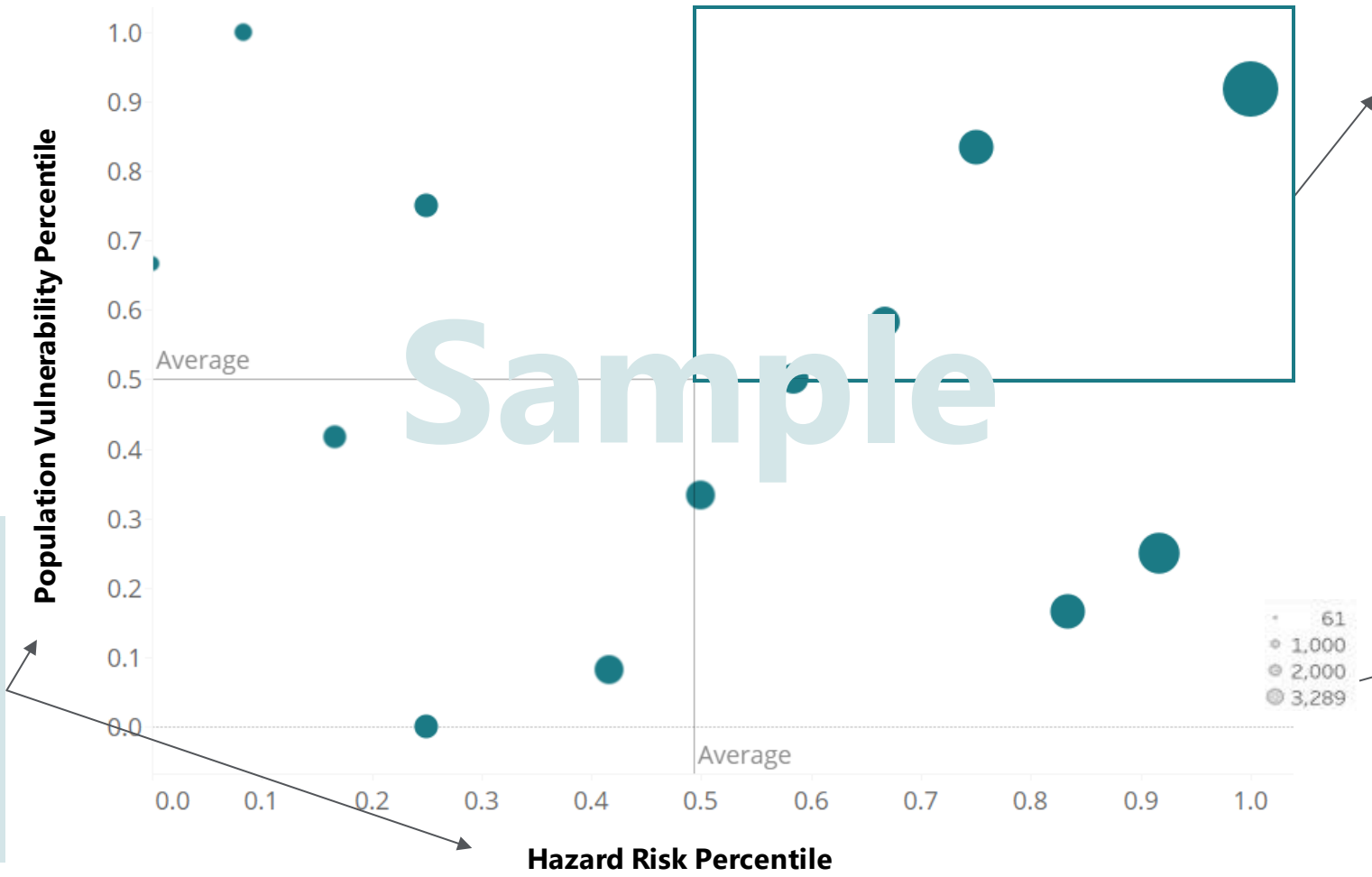
Prioritized Census Tracts

- High Population Vulnerability
- High Hazard Risk

Census tracts with both more households in severe flood/hurricane zones AND households with more vulnerable occupants

How to interpret the Census Tract plots

The chart below represents a *sample* locality and offers guidance on how to interpret the information when planning mitigation efforts.



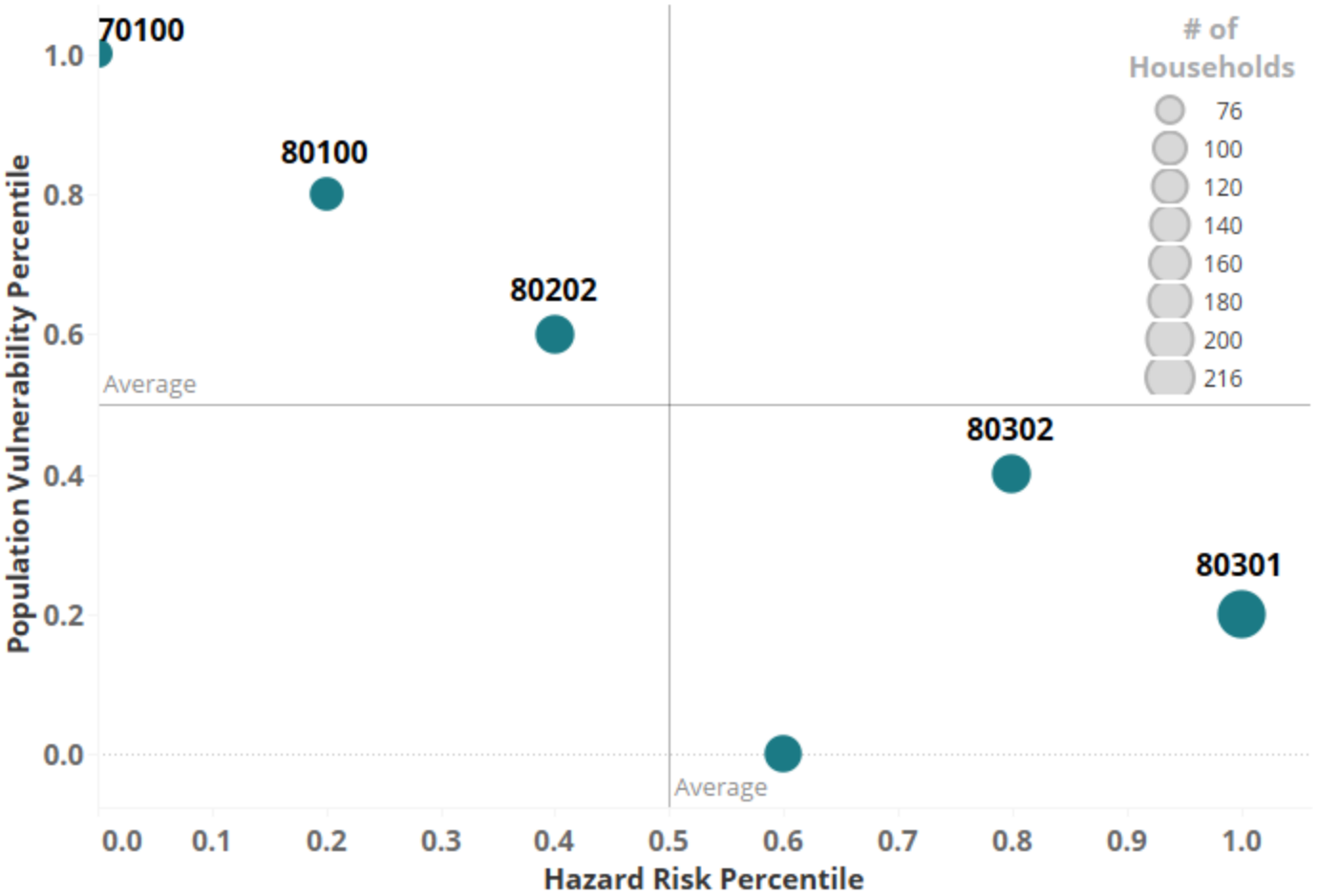
Circles in the upper right quadrant represent areas that you might consider prioritizing due to high population vulnerability and hazard risk

The x- and y-axes measure the percentiles of hazard risk and population vulnerability for each area

Size of the circle indicates the number of households in each area

Prioritizing Census Tracts in Alleghany County

Areas with the most vulnerable populations and households in severe flood and hurricane zones present prioritization opportunities for mitigation projects.



Priority Areas in Flood and Hurricane Zones

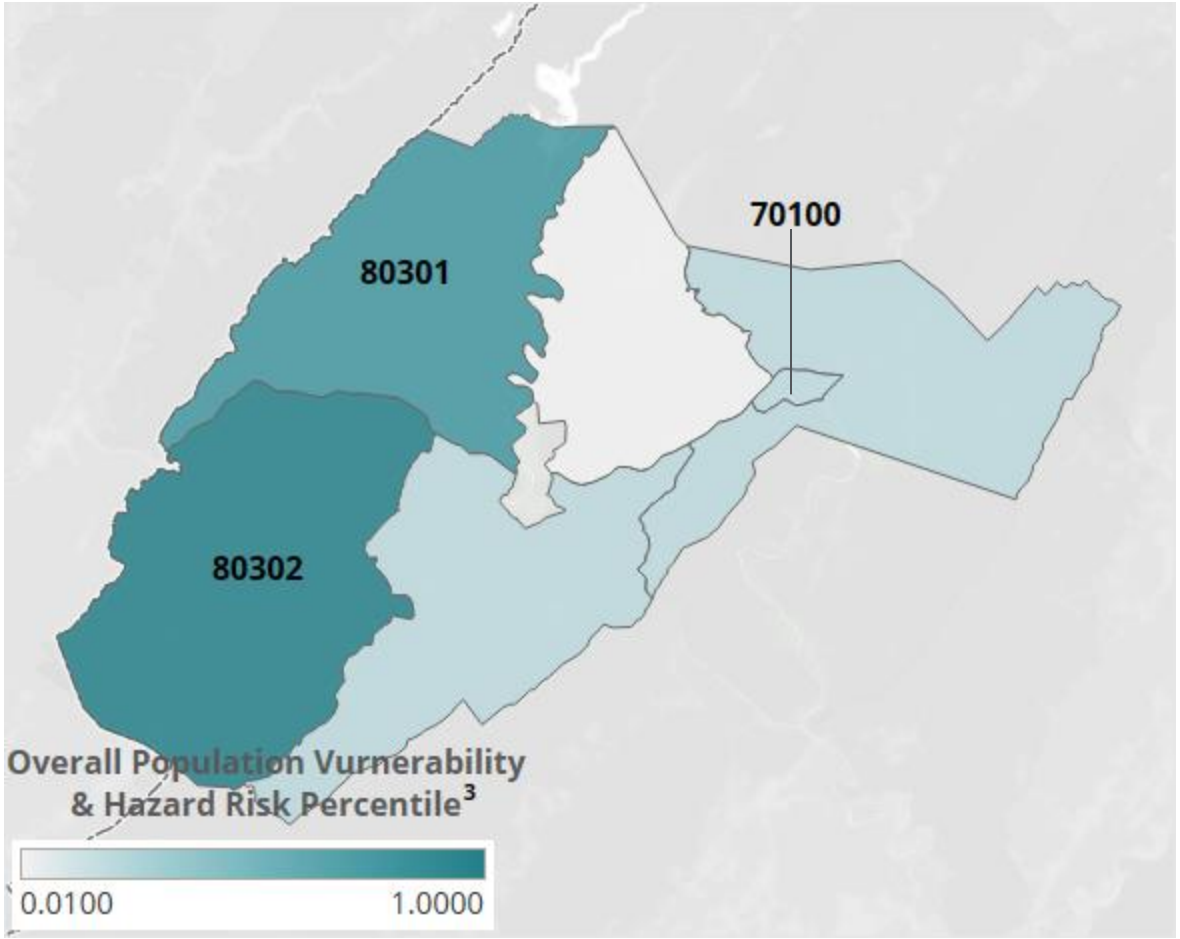
			Within-Alleghany County Percentiles		
#	Area	# of Households	Overall Percentile	Population Vulnerability[1] Percentile	Hazard Risk[2] Percentile
1	80302	141	100th	40th	80th
2	80301	216	80th	20th	100th
3	80202	139	20th	60th	40th
4	80100	106	20th	80th	20th
5	70100	76	20th	100th	0th
6	80201	130	0th	0th	60th

1. Population Vulnerability should be interpreted as a household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones
2. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity

Prioritizing Census Tracts in Alleghany County continued

Areas with the most vulnerable populations and households in severe flood and hurricane zones present prioritization opportunities for mitigation projects.

Potential Priority Areas in Alleghany County



Priority Areas in Flood and Hurricane Zones

#	Area	# of Households	Within-Alleghany County Percentiles: Overall Percentile	Within-Alleghany County Percentiles: Population Vulnerability[1] Percentile	Within-Alleghany County Percentiles: Hazard Risk[2] Percentile
1	**80302**	**141**	**100th**	40th	80th
2	**80301**	**216**	**80th**	20th	100th
3	**80202**	**139**	**20th**	60th	40th
4	**80100**	**106**	**20th**	80th	20th
5	**70100**	**76**	**20th**	100th	0th
6	**80201**	**130**	**0th**	0th	60th

1. Population Vulnerability should be interpreted as a household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones
2. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity
3. Sub-localities at the 0th percentile (areas in white) do not have households in Flood or Hurricane Zones

Priority Census Tracts Summary

When evaluating future mitigation project opportunities, it may be helpful to consider the underlying attributes of population vulnerability and the number of houses in each flood/hurricane zone.

			Within-Alleghany County Percentiles										
#	Census Tract	# of Households	Overall	Population Vulnerability[1]	Communities of Color	Elevated Health Risk	Low Income	# of People	# of Children	Unemployment Risk	Age	Lack of Vehicle Access
1	**80302**	**141**	**100th**	**40th**	0th	0th	80th	60th	40th	80th	60th	60th
2	**80301**	**216**	**80th**	**20th**	40th	20th	60th	80th	100th	60th	20th	0th
3	**80202**	**139**	**20th**	**60th**	80th	40th	20th	40th	20th	0th	100th	40th

			W/I-Alleghany County Percentiles		Alleghany County Household Counts[3]							
#	Census Tract	# of Households	Overall	Hazard Risk[2]	100 Year Coastal	100 Year Riverine FW	100 Year Riverine	500 Year Riverine	Hurr. Zone A	Hurr. Zone B	Hurr. Zone C	Hurr Zone D
1	**80302**	**141**	**100th**	**80th**	-	-	140	1	-	-	-	-
2	**80301**	**216**	**80th**	**100th**	-	4	207	5	-	-	-	-
3	**80202**	**139**	**20th**	**40th**	-	-	100	39	-	-	-	-

1. Population Vulnerability should be interpreted as an average household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones
2. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity
3. Note that the total sum of households may be more than the households in your locality because some are located in both flood and hurricane zones

Review of FEMA Funding & Past Mitigation Projects

Review of Mitigation Projects In Your Locality

The figures below provide information regarding mitigation projects[1] in your locality from 1990-2019 that may be helpful to consider in planning potential future mitigation projects.

Total Exclusive Project Funding[1]

$90,734

This is the total amount of federal funding alloted to mitigation projects solely owned by your locality from 1990-2019

Total Shared Project Funding[1]

$539,476

This is the total amount of federal funding allotted to mitigation projects owned by your locality and at least 1 other from 1990-2019

Exclusive Projects

1

Average Project Size

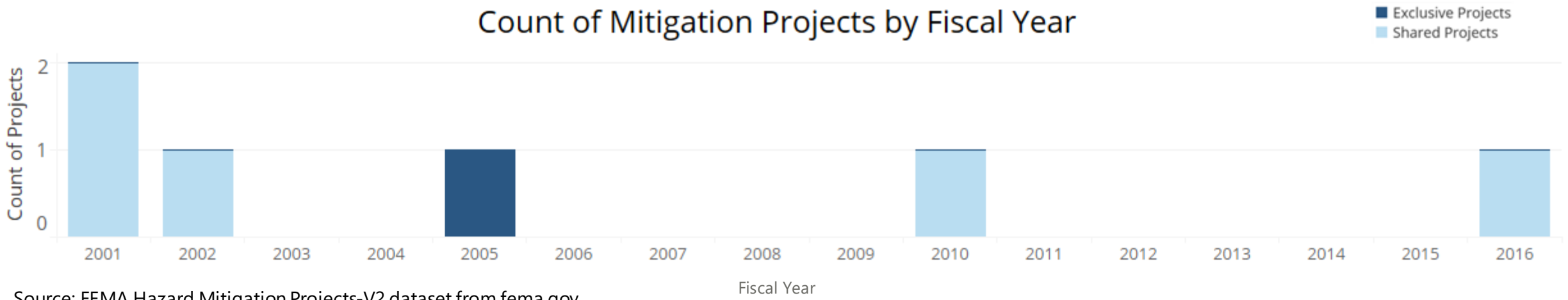
$91K

Shared Projects

5

Average Counties Per Project

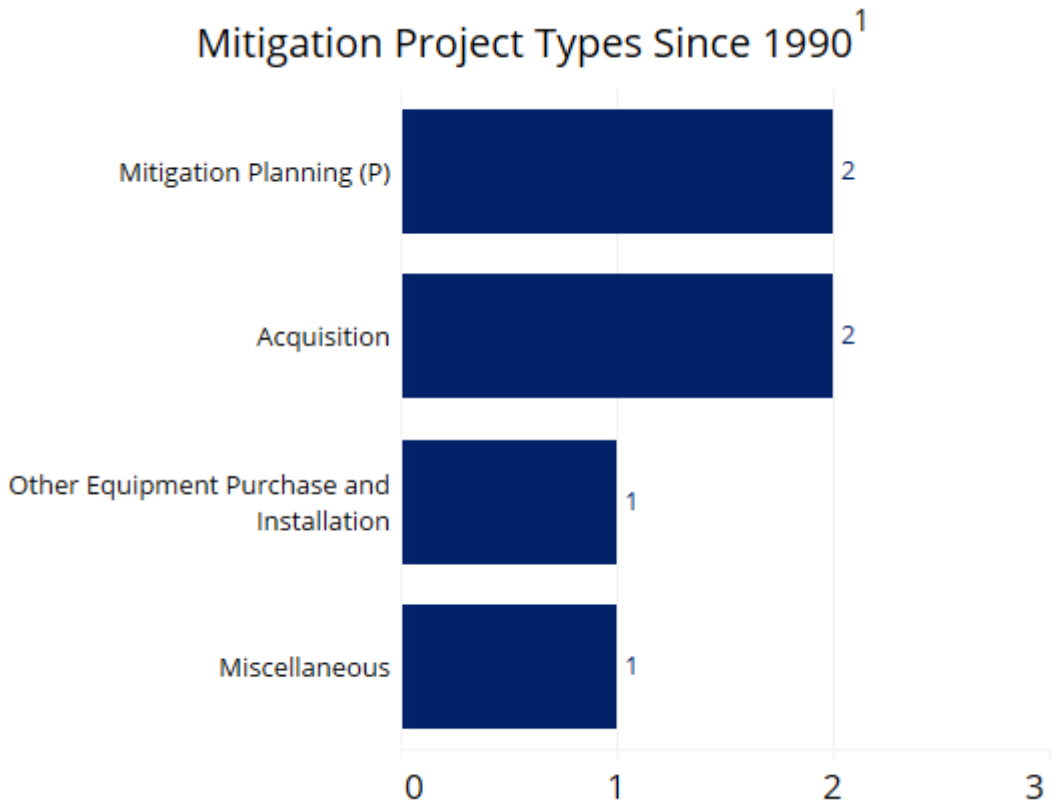
4.0

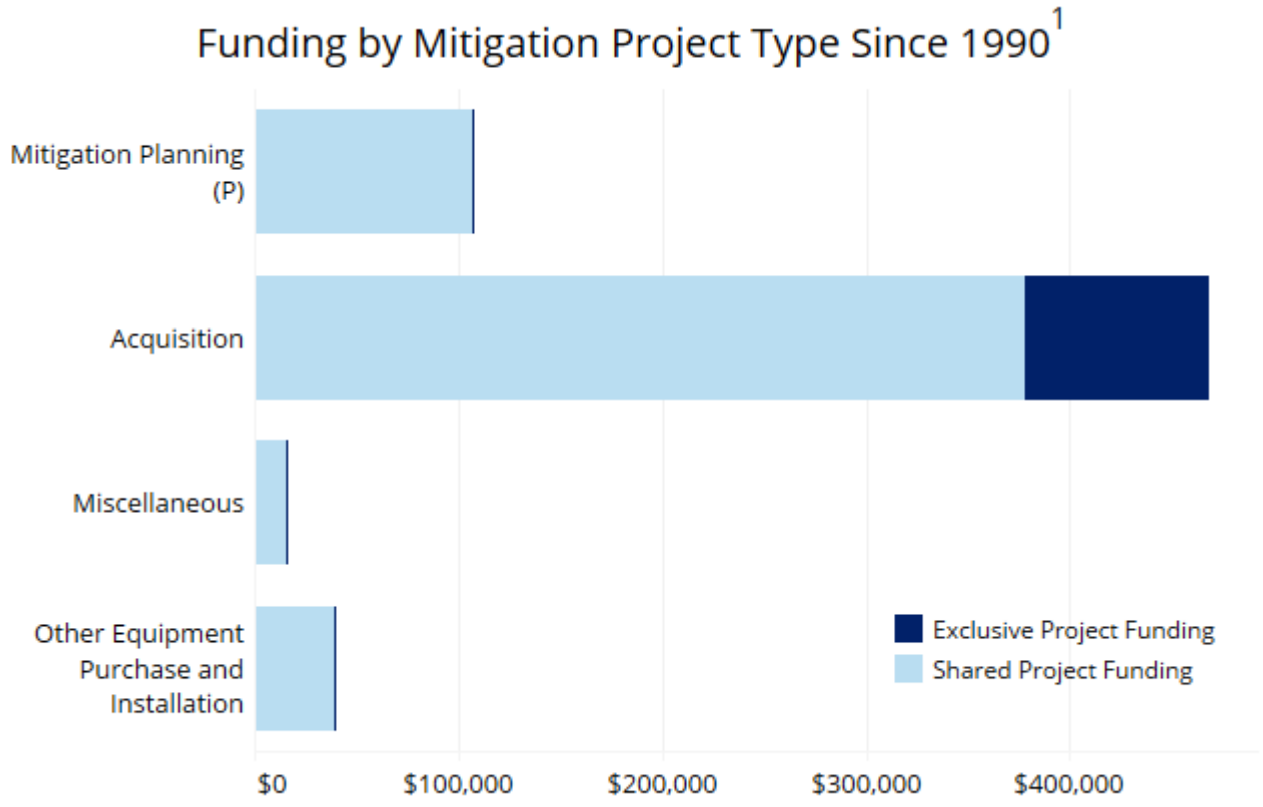


1. Source: FEMA Hazard Mitigation Projects-V2 dataset from fema.gov

Past Mitigation Projects – Top Project Types

The figures below provide information regarding mitigation projects[1] in your locality from 1990-2019 that may be helpful to consider in planning potential future mitigation projects.





1. Source: FEMA Hazard Mitigation Projects-V2 dataset from fema.gov

COVID-19 Impacts

COVID-19 In Your Locality

Since the beginning of the COVID-19 Pandemic, Alleghany County has experienced the following:

Cases[1]

Total	Per 100k
112 **122nd** out of 133 localities[2]	**733** **127th** out of 133 localities

Hospitalizations[1]

Total	Per 100k
11 **110th** out of 133 localities	**72** **102nd** out of 133 localities

Deaths[1]

Total	Per 100k
4 **101st** out of 133 localities	**26** **80th** out of 133 localities

1. COVID-19 case, hospitalization, and death figures are sourced from the Virginia Department of Health as of **10/28/2020**
2. COVID-19 Impact rankings are for all 133 Virginia localities, rather than the 132 included in the BRIC analysis for having at least one household in a flood or hurricane zone

Considerations for Next Steps

Considerations for Next Steps

When evaluating future mitigation project opportunities, the population vulnerability and hazard risk metrics can supplement existing measures to design mitigation projects with an equity lens.

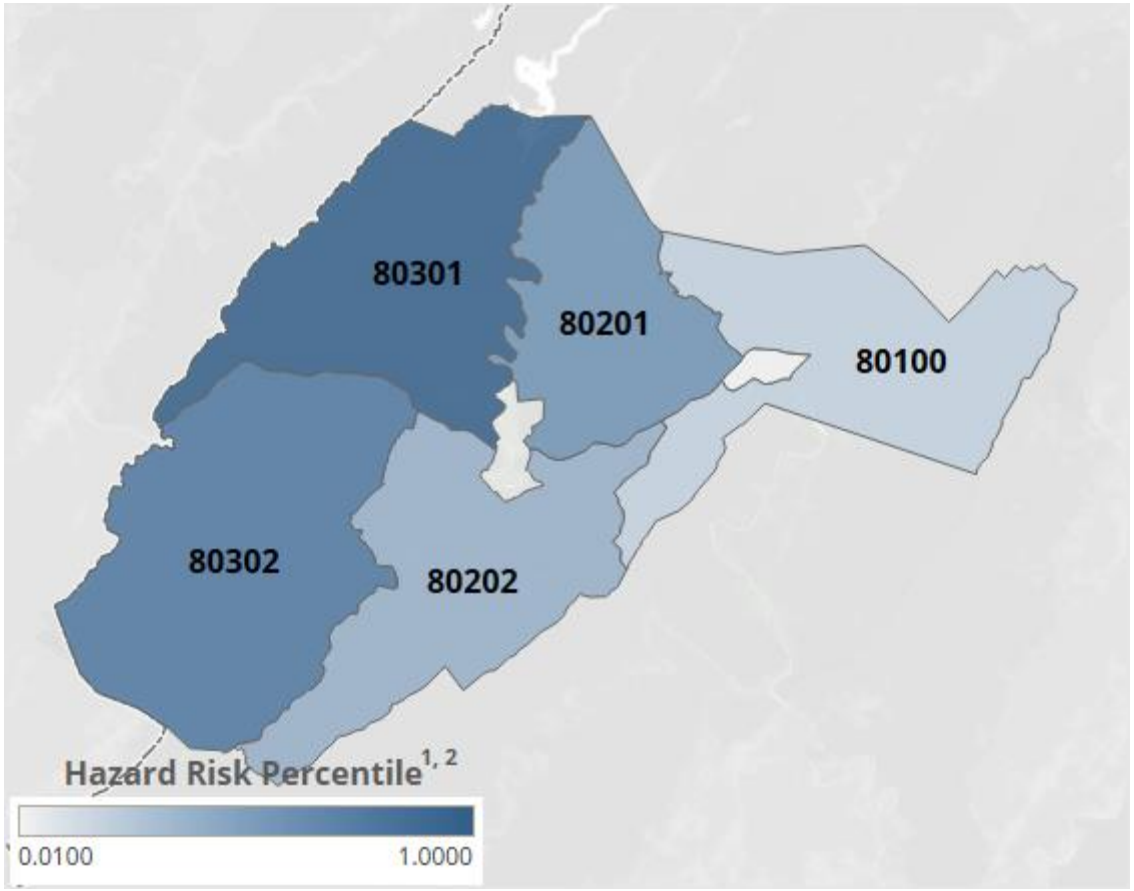
- Consider targeting **priority areas** when designing future mitigation projects
- Consider analysis at the **census tract/block level** to understand population vulnerability and hazard risks at a granular level to support decisions on mitigation projects
- Consider **supplementing these people-focused metrics** with existing infrastructure, elevation, and financial analysis for a holistic mitigation planning approach that includes equity considerations
- Consider **past project types** and **prior funding** in the overall mitigation strategy

Appendix

What areas in your locality have the greatest hazard risk?

When designing mitigation projects, it may be helpful to consider specific census tracts that have the greatest number of households residing in the more severe flood and/or hurricane zones.

Hazard Risk[1] in Alleghany County



Top-5 Census Tracts for Hazard Risk[1]

				Alleghany County Household Counts							
#	Census Tract	# of House-holds	Hazard Risk Percentile	100 Year Coastal	100 Year Riverine FW	100 Year Riverine	500 Year Riverine	Hurr. Zone A	Hurr. Zone B	Hurr. Zone C	Hurr. Zone D
1	**80301**	**216**	**100th**	0	4	207	5	0	0	0	0
2	**80302**	**141**	**80th**	0	0	140	1	0	0	0	0
3	**80201**	**130**	**60th**	0	35	70	25	0	0	0	0
4	**80202**	**139**	**40th**	0	0	100	39	0	0	0	0
5	**80100**	**106**	**20th**	0	28	57	21	0	0	0	0

Note: see the appendix for a complete data table for all Census Tracts

1. Hazard risk reflects the number of households located in Flood and Hurricane Zones, weighted by severity
2. Census tracts at the 0th percentile (areas in white) do not have households in Flood or Hurricane Zones

What is population vulnerability and how is it calculated? *continued*

The vulnerability score for each Virginia household reflects an estimate of the household's ability to safely respond in the event of an environmental disaster.

Population Vulnerability

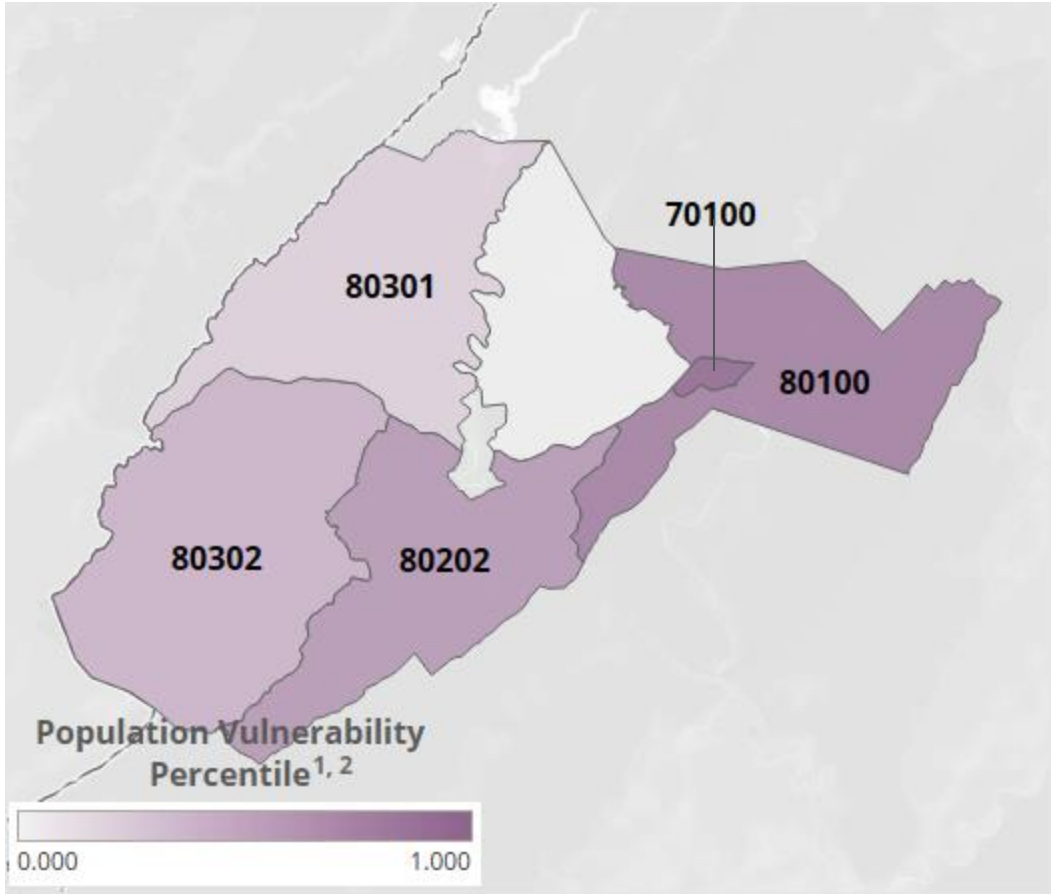
Attribute[1]	Weighting[2]	Description (in a household)
Low Income	18%	Number of adults with income less than $30,000
Elevated Health Risk	17%	Number of adults with one or more serious health conditions
Age (Older Adults)	15%	Number of adults who are age 65 and older
Communities of Color	13%	Number of Black or African American or Hispanic or Latino adults
# of Children in Household	12%	Number of children
# of People in Household	10%	Number of adults and children
Unemployment Risk	8%	Number of adults at high risk of unemployment
Lack of Vehicle Access	6%	Does the household lack access to a motor vehicle?

1. Two attributes - English as a Primary Language and Prevalence of Mobile Housing - were dropped from consideration based on the 8/20/2020 BRIC Working Group Session
2. Attribute contributions to Population Vulnerability were weighted as a result of the BRIC Working Group Session on 8/20/2020

What areas in your locality have the greatest population vulnerability?

When designing mitigation projects, it may be helpful to consider specific census tracts that are home to the most vulnerable individuals in the event of an environmental disaster.

Population Vulnerability[1] in Alleghany County



Top-5 Census Tracts for Population Vulnerability[1]

			Within-Alleghany County Percentiles								
#	Census Tract	# of House-holds	Pop. Vul.	Comm. of Color	Elevated Health Risk	Low Income	# of People	# of Children	Unem. Risk	Age	Vehicle Access
1	**70100**	**76**	**100th**	100th	60th	100th	0th	60th	100th	0th	100th
2	**80100**	**106**	**80th**	20th	100th	40th	100th	80th	40th	80th	80th
3	**80202**	**139**	**60th**	80th	40th	20th	40th	20th	0th	100th	40th
4	**80302**	**141**	**40th**	0th	0th	80th	60th	40th	80th	60th	60th
5	**80301**	**216**	**20th**	40th	20th	60th	80th	100th	60th	20th	0th

Note: See the appendix for a complete data table for all census tracts

1. Population Vulnerability should be interpreted as an average household's ability to safely respond to an environmental disaster and only considers households located in flood or hurricane zones
2. Census tracts at the 0th percentile (areas in white) do not have households in Flood or Hurricane Zones

Data table | Population Vulnerability & Hazard Risk

			Percentiles											Within-locality Household Counts							
#	Census Tract	# of Households	Overall	Population Vulnerability	Communities of Color	Elevated Health Risk	Low Income	# of People	# of Children	Unem-ployment Risk	Age	Lack of Vehicle Access	Hazard Risk	100 Year Coastal	100 Year Riverine FW	100 Year Riverine	500 Year Riverine	Hurr. Zone A	Hurr. Zone B	Hurr. Zone C	Hurr Zone D
1	**80302**	**141**	**100th**	40th	0th	0th	80th	60th	40th	80th	60th	60th	80th	0	0	140	1	0	0	0	0
2	**80301**	**216**	**80th**	20th	40th	20th	60th	80th	100th	60th	20th	0th	100th	0	4	207	5	0	0	0	0
3	**80202**	**139**	**20th**	60th	80th	40th	20th	40th	20th	0th	100th	40th	40th	0	0	100	39	0	0	0	0
4	**80100**	**106**	**20th**	80th	20th	100th	40th	100th	80th	40th	80th	80th	20th	0	28	57	21	0	0	0	0
5	**70100**	**76**	**20th**	100th	100th	60th	100th	0th	60th	100th	0th	100th	0th	0	27	43	6	0	0	0	0
6	**80201**	**130**	**0th**	0th	60th	80th	0th	20th	0th	20th	40th	20th	60th	0	35	70	25	0	0	0	0

1. Note: These figures only account for census areas that have households in flood and/or hurricane zones

Data table | FEMA Funding[1]

Grantee	Year of Fiscal Year	Exclusive vs Shared	Subgrantee	Project Counties	Project Type(s)	Federal Funds Obligated
ALLEGHANY COUNTY	2016	Shared	ROANOKE VALLEY - ALLEGHANY RC	ROANOKE (CITY); ALLEGHANY; BOTETOURT; CRAIG; SALEM (CITY); COVINGTON (CITY); ROANOKE	91.3: Local Multihazard Mitigation Plan - UPDATE	$60,024
	2010	Shared	Roanoke Valley-Alleghany Regional Commission	ALLEGHANY; BOTETOURT; COVINGTON CITY; CRAIG; ROANOKE; ROANOKE CITY; SALEM CITY	91.1: Local Multihazard Mitigation Plan	$46,520
	2005	Exclusive	Alleghany (County)	ALLEGHANY	200.1: Acquisition of Private Real Property (Structures and Land) - Riverine	$90,734
	2002	Shared	Wise (County)	WISE; ALLEGHANY	200.1: Acquisition of Private Real Property (Structures and Land) - Riverine	$377,655
	2001	Shared	Arlington County	ALLEGHANY; ARLINGTON	602.1: Other Equipment Purchase and Installation	$39,192
					800.1: Miscellaneous	$16,085

1. Source: FEMA Hazard Mitigation Projects-V2 dataset from fema.gov

2020 Census Tract

Roanoke city

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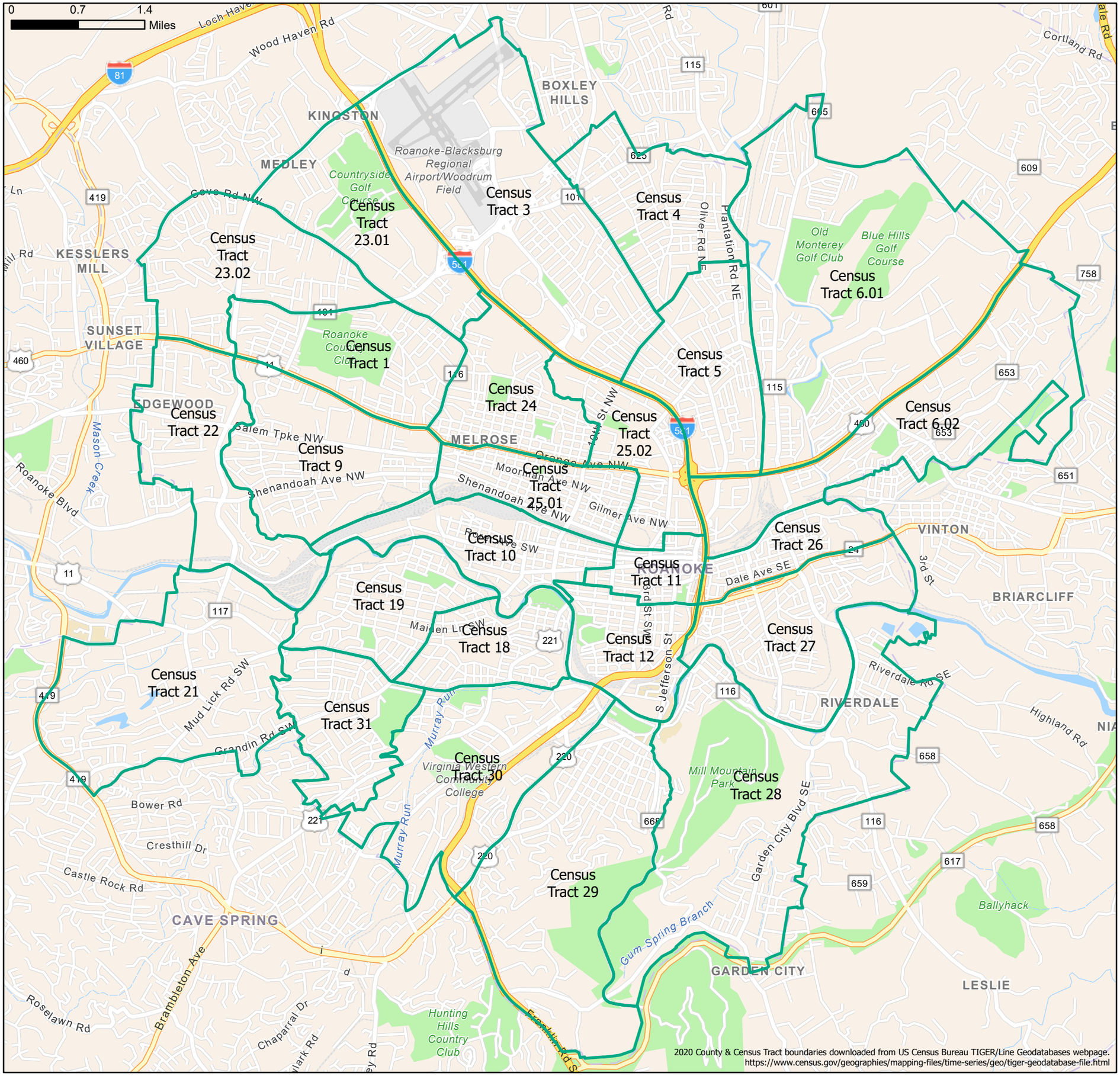
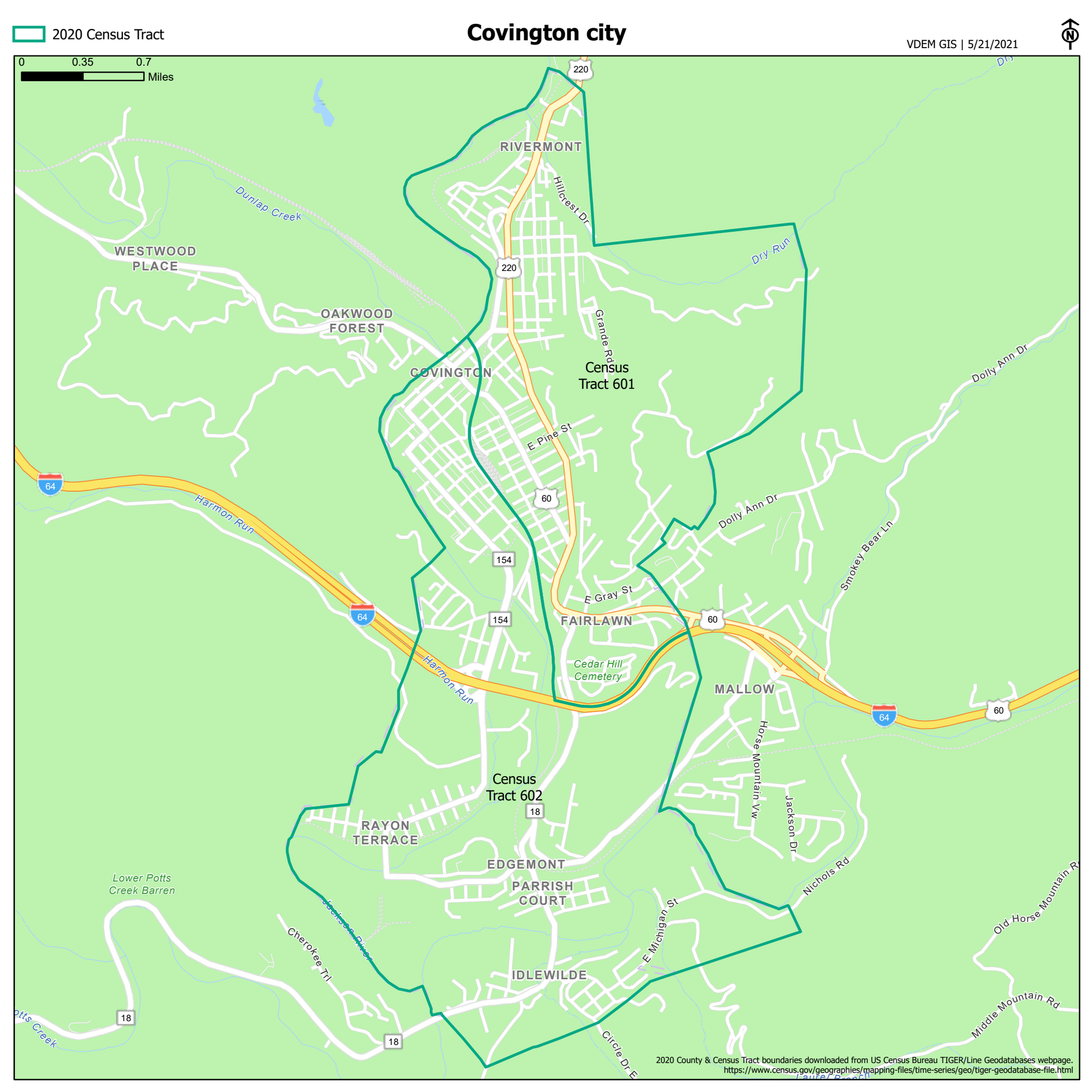


2020 County & Census Tract boundaries downloaded from US Census Bureau TIGER/Line Geodatabases webpage.
https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-geodatabase-file.html


2020 Census Tract
Covington city
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0
0.35
0.7
Miles
RIVERMONT
Hillcrest Dr
Dunlap Creek
WESTWOOD PLACE
OAKWOOD FOREST
COVINGTON
Census Tract 601
Grande Rd
Dry Run
Dolly Ann Dr
E Pine St
Harmon Run
Smokey Bear Ln
E Gray St
FAIRLAWN
Cedar Hill Cemetery
MALLOW
Horse Mountain Vw
Jackson Dr
Census Tract 602
RAYON TERRACE
EDGEMONT
PARRISH COURT
Nichols Rd
Lower Potts Creek Barren
Cherokee Trl
E Michigan St
IDLEWILDE
Old Horse Mountain Rd
Middle Mountain Rd
Circle Dr E
220
64
60
154
18
2020 County & Census Tract boundaries downloaded from US Census Bureau TIGER/Line Geodatabases webpage.
https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-geodatabase-file.html

2020 Census Tract

Alleghany County

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